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Volume 18

JANUARY, 1935

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TREATMENT OF PELVIC INFLAMMATION BY HEAT: INDICATIONS AND RESULTS*

LAWRENCE M. RANDALL, M.D., and VIRGIL S. COUNSELLER, M.D.

Rochester, Minnesota

THE opinion of most physicians who are actively engaged in treatment of infections of the genital tract of women is that conservative medical measures take precedence, as a rule, over surgical treatment, for the desire is to conserve tissue and tissue-function. Surgical measures are to be used to drain collections of pus and to treat those women whose condition conservative treatment has failed to cure. Broadly speaking, three primary features are concerned with conservative treatment: time, rest, and heat. Sufficient time must be allowed for the individual to respond to treatment. Rest is essential, and the importance of it is not, in general, sufficiently appreciated. If these two conditions cannot be controlled, results from treatment are often unsatisfactory.

Concern here is with the third factor, heat, and the most effective method of its application. It has been demonstrated that heat, properly and sufficiently applied to the genital tract of women who are suffering from pelvic inflammatory disease, definitely increases the temperature of the pelvic viscera, thereby increasing the blood supply, causing local leukocytosis. Numerous methods have been used to accomplish this, and the most recent and efficient we believe to be the method developed by Elliott. This consists of a supply of water, under controlled pressure and temperature, that circulates through a specially shaped, elastic rubber applicator which is placed in the vagina. The pressure is regulated to distend the vagina, flattening the rugae, and pressing

against the cervix and fornices of the vagina, thus allowing the maximal amount of contact with the viscera to be treated. The pressure necessary to accomplish this will vary with each patient and perhaps with different treatments in the same case. Palpation of the amount of distention of the bag in the vagina is a better index of necessary pressure than the reading on the pressure gauge of the treatment machine. Given a sufficiently distended bag, that amount of heat is applied which can be tolerated at that pressure. This will be found to average about 125° F.

Our usual practice in administering a course of treatments is to make an application of fifteen to thirty minutes on the first day, thirty minutes on the second day, forty-five to sixty minutes on the third day, and to continue thereafter with a treatment of one hour's duration once or twice a day. At the beginning of any given treatment the temperature of the water should be between 110° and 115° F. The temperature is raised in the course of ten to fifteen minutes to the maximal tolerance of the patient. The average patient is able to tolerate a temperature of between 125° and 130° F. for an hour, under pressure of one pound to a pound and a half. There are individual variations, however, so that the maximal pressure and temperature will need to be determined for each patient. The applicator is inserted, completely empty of water, folded, and lubricated with any lubricating jelly. The rubber tube leading to the bag is covered with several layers of wet gauze to avoid irritation at the introitus. It is preferable, after the bag has been inserted and filled, to examine either through the rectum or through the vagina, to be sure that the

*From the Section on Obstetrics and Gynecology and the Division of Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Minnesota State Medical Association, Duluth, Minnesota, July 18, 1934.

PELVIC INFLAMMATION—RANDALL AND COUNSELLER

TABLE I. GONORRHEAL SALPINGO-OÖPHORITIS:
20 CASES

Type	Results		
	Excellent	Good	Unsatisfactory or incomplete
Subacute	7	1	0
Chronic	3*	4	5†
Total	10	5	5

*One patient underwent bilateral salpingectomy.
†Three patients received incomplete treatment.

Average number of treatments.....	18
Greatest number of treatments.....	39
Least number of treatments.....	9

bag is in its proper position. It is our policy to inspect the vaginal mucosa occasionally after treatment in order to be sure that injury is not being done to it, although, in our experience, there has been no instance of significant injury.

The patient should be examined at regular intervals, usually intervals of one week, to determine the response to treatment. As improvement occurs the subjective symptoms of pain and tenderness usually disappear first, to be followed later by reduction in size of the pelvic masses. Naturally, the amount of treatment needed by different patients will vary considerably. Improvement continues after treatment has been discontinued, so that it is usually preferable to treat a patient for two or three weeks, and then to allow an interval to elapse, after which the patient should be re-examined and the need for further treatment determined. If at this time any residual symptoms, or persistence of symptoms is noted, another course of treatment may be given and a period of time again allowed to elapse. It frequently will be noted, at the end of the interval between observations, that improvement in the condition of the pelvis has continued. Hence, it is not always possible to determine immediately after a course of treatment what the amount of benefit is to be.

We are presenting the results of treatment of 125 women who had pelvic inflammatory disease, and have excluded all cases in which this diagnosis could not be definitely established. These 125 patients have been divided into three groups, in accordance with the condition from which they suffered: (1) gonorrheal salpingo-oöphoritis (Table I), (2) chronic salpingo-

TABLE II. CHRONIC SALPINGO-OÖPHORITIS OF UNKNOWN ETIOLOGY: ELLIOTT TREATMENT ONLY (67 CASES)

Type	Results		
	Excellent	Good	Unsatisfactory or incomplete
Chronic with exacerbation	0	12	4
Chronic	2	31	18*
Total	2	43	22

*Four incomplete.

Average number of treatments.....	15
Greatest number of treatments.....	27
Least number of treatments.....	6

oöphoritis of unknown etiology (Tables II and III), and (3) parametritis or chronic pelvic cellulitis (Table IV). This grouping seems desirable because of the difference in response to treatment demonstrated by patients who suffered from the various conditions. Included in the present study, also, are the end-results of treatment of some patients who were subjected to surgical measures, as well as to treatment by heat.

The results of treatment have been graded as excellent, good or satisfactory, and unsatisfactory or incomplete (Fig. 1). Results were considered excellent only in those cases in which the patient made no more complaint referable to the pelvis, and all evidence of the inflammatory condition, as determined by examination of the pelvis, disappeared. The results were graded as good or satisfactory in those cases in which pelvic symptoms were relieved, but in which pelvic examination revealed some residual scarring in the pelvis. The group in which results were designated unsatisfactory or incomplete was composed of cases in which there was persistence of pelvic disease and of pelvic symptoms. In some of the cases in the last group, patients had been advised to undergo surgical treatment, but had refused; in other cases we did not feel that a sufficient length of time or a sufficient number of treatments had been given, and in the remaining cases, regardless of the number of treatments, we were not satisfied with the results, as far as treatment by heat was concerned.

In thirty-seven cases (29.6 per cent of the entire group) results were excellent. Seventeen (45.9 per cent) of the thirty-seven patients were

PELVIC INFLAMMATION—RANDALL AND COUNSELLER

TABLE III. CHRONIC SALPINGO-OÖPHORITIS OF UNKNOWN ETIOLOGY: ELLIOTT TREATMENT AND SURGICAL TREATMENT (23 CASES)

Type	Results		
	Excellent	Good	Unsatisfactory or incomplete
Chronic with exacerbation	6	0	0
Chronic	16	1	0
Total	22	1	0

Preoperative and postoperative Elliott treatment, 5 patients
 Preoperative Elliott treatment only, 10 patients
 Postoperative Elliott treatment only, 15 patients

TABLE IV. CHRONIC PELVIC CELLULITIS: RESULTS OF TREATMENT (15 CASES)

Results	Cases
Excellent	3*
Good	6
Unsatisfactory or incomplete	5

*One patient underwent subtotal hysterectomy.

treated surgically, in addition to receiving the Elliott treatments. In fifty-five cases (44 per cent of the entire group) results were classified as good or satisfactory. Four (7.2 per cent of the fifty-five patients) were treated surgically. In the majority of the fifty-five cases the condition was of considerable duration, and in many cases there had been repeated exacerbations. In thirty-three cases (26.4 per cent of the entire group) results were classified as unsatisfactory or incomplete. Four patients (12.1 per cent of this group of thirty-three) received surgical treatment. Of these four patients, one had tuberculous salpingitis; one, chronic tubo-ovarian abscess that was drained vaginally; one, an inflammatory cyst with extensive peritoneal exudate, and one, chronic parametritis. In fourteen of this group of thirty-three cases in which unsatisfactory or incomplete results were obtained, operation had been performed previously, and in an additional group of seven patients treatment was felt to be incomplete.

Thus, the complete program of treatment produced satisfactory results in ninety-two, or 73.6 per cent of all the cases. Twenty-one (22.8 per

cent) of the ninety-two patients received surgical treatment in addition to application of heat; hence, 77.2 per cent of the satisfactory results may be attributed to conservative measures.

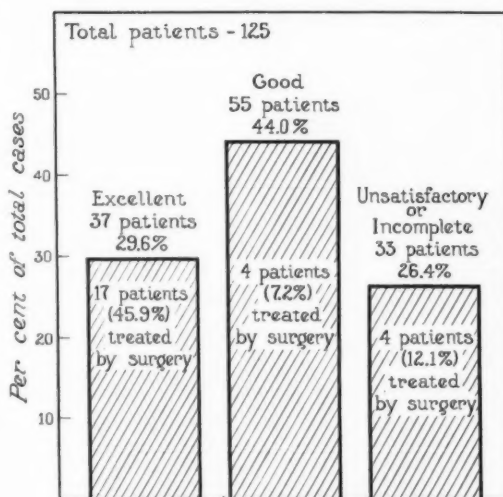


Fig. 1. Results of treatment.

Twenty-one of the 125 patients had rather extensive cervicitis. As is commonly seen associated with this condition, there was considerable tenderness of the sacro-uterine ligaments and of the bases of the broad ligaments, because of the associated lymphangitis. Following treatments with heat the uterine ligaments were less tender, and tended to return to their normal consistency. The local condition of the cervix was benefited so that in only five of the twenty-one cases was subsequent treatment by cauterization deemed necessary. This is not a large enough group of patients with cervicitis on which to base a final opinion, but it would seem that patients who have extensive cervicitis, and who are in the child-bearing age, should derive considerable benefit from this form of treatment by heat, and that subsequent treatment would be less radical than it is in those cases in which heat is not used. We do not believe that this form of treatment should supplant treatment by cauterization, applied in the office, for cervical ectropion or for moderate degrees of chronic cystic cervicitis.

The response of gonorrheal salpingitis and of gonorrheal cervicitis has been very good.

HEMORRHAGE IN OBSTETRICS—LA VAKE

Gonorrheal infection of the urethra, however, has not yielded to application of heat to the vagina, so that the usual anti-gonorrheal treatment for urethritis has been employed in conjunction. We have also, in some cases, treated the cervix following the Elliott treatment by means of tampons soaked in 2 per cent protargol or 10 per cent argyrol.

Our experience, as reported here, deals largely with those chronic infections for which surgical treatment is more commonly advised, and for which conservative measures most often fail. The method of treatment by heat, here described, has in our opinion been responsible for improvement in the majority of cases, to the extent that surgical interference was not necessary to return the patient to normal activity. Examination of the pelvis of a patient who has had a chronic infection frequently reveals some residual thickening and scarring. Inasmuch as the symptoms are relieved and the patient is able to return to activity it seems fair to call this a satisfactory result. In those cases in which surgical treatment was deemed necessary, the use of heat before operation has led, in most instances, to a technically easier and less radical operation. In addition, treatment by heat applied through the vagina, during the postoperative period, has led to smoother postoperative convalescence, and to absorption of residual exudate in the pelvis.

The more recent the infection the better the prospect for complete cure. Our experience in

acute conditions was chiefly limited to cases of gonorrheal salpingitis, and the results in these cases were excellent. We have seen too few patients with acute postabortal infections, in which this form of treatment has been used, to justify us in making a statement. Holden has given treatment in many such cases, and has reported striking reduction in morbidity and mortality.

Of the thirty-three cases in which we obtained unsatisfactory results, in fourteen operation had been performed previously. This suggests that other factors than the infectious process itself may be concerned with the production of pelvic symptoms. It is not infrequently found, at a second operation performed on patients of this type, that loops of small bowel are adherent to the pelvic viscera. Likewise, extensive adhesions often have bound the uterus in retroversion sufficient to produce symptoms which we cannot hope to relieve by conservative means. It is therefore too much to hope that any means of treatment by heat will cure all of the patients who have chronic pelvic inflammatory disease. We believe, however, that application of heat by the method devised by Elliott will simplify and increase the efficiency of conservative treatment of this condition. The general rules of treatment of this condition, however, remain essentially the same; namely, that time, rest, and heat, and intelligent use of surgical measures are fundamental.

HEMORRHAGE IN OBSTETRICS*

R. T. LA VAKE, M.D.

Minneapolis

HEMORRHAGE is the primary cause of approximately 17 per cent of obstetric deaths. It enters as a contributing factor in about one in twenty deaths from other puerperal causes. Next to sepsis, it is the most frequent cause of postpartum morbidity. The consideration of hemorrhage involves the examination of abortion, ectopic pregnancy, premature separation of the

placenta, placenta previa, postpartum hemorrhage, and rupture of the uterus.

Abortion

Death from hemorrhage in abortion can be prevented in practically every case if women are instructed to report any vaginal bleeding immediately in pregnancy, if they follow out this instruction, and if we then place them under conditions that make the treatment of inevitable abor-

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, July 16, 1934.

tion safe as regards facilities for sterile packing when indicated, or curettage when indicated in afebrile cases, and as regards facilities for intravenous saline and blood transfusion. These facts are well known and yet approximately 8 per cent of abortion deaths are still due to hemorrhage.

As 75 per cent of abortion deaths are due to sepsis, vaginal interference of any kind is to be avoided where possible. If, without a question of doubt, normal pregnancy has been diagnosed before the advent of bleeding no examination may be necessary. Where doubt exists, or a differential diagnosis must be made because the patient has not been examined before, the rectal examination will suffice in most instances and we run no risk of introducing infection.

Approximately one in every four or five maternal deaths is due to abortion, criminal or otherwise. This menacing toll of abortion deaths appears to be largely due to a disturbing increase in loose thinking on the part of an increasing number of people, and to misinformation as to the safety of abortion even under the most perfect conditions. It is not confined to the unmarried, but is the cause of many motherless families.

Ectopic Pregnancy

Ectopic pregnancy is the cause of approximately 6 per cent of maternal deaths. Among these deaths about 60 per cent are directly due to hemorrhage. Experience shows that three out of every four of these deaths have been directly attributable to the following preventable causes: failure of the patient to present for examination as soon as she suspects that she may be pregnant; failure to report vaginal bleeding or abdominal pain of any kind in early pregnancy; failure of the physician to suspect ectopic pregnancy in the presence of spotting or definite bleeding or abdominal pain with or without fainting in early pregnancy; or, when suspecting ectopic pregnancy, failure in securing consultation when in doubt; and failing to place the patient under conditions that would have made quick operative intervention plus intravenous saline and blood transfusion possible.

Let me cite one case. A woman, married only three weeks, went shopping with her husband at three o'clock one afternoon. She suddenly fainted in the store. When she recovered con-

sciousness, she complained of abdominal pain and was taken home immediately and a physician called. The physician saw her at four o'clock. She gave a history of not having skipped a period. There was no vaginal bleeding, but she was very pale, had a rapid pulse and was exquisitely tender to vaginal and abdominal palpation. He administered aromatic spirits of ammonia for her feeling of faintness, diagnosed the condition as a fainting attack and left the house at five o'clock when she said she felt better. At ten p. m., five hours later, he called a consultant, explained his findings and treatment and said that though she had seemed to improve up to nine o'clock, at that time she had had another fainting attack and seemed markedly worse than when he had first seen her. The consultant rushed her to a hospital immediately, where she died before anything could be done.

Since 1920, at the Minneapolis General Hospital, 147 women have been operated upon for ectopic pregnancy. In these cases a history of a peculiar menstrual period, spotting, abdominal pain with or without fainting had antedated their entrance to the hospital from one to forty days. Over one-half of these women were admitted to the hospital after rupture had occurred. Where possible all were typed and cross matched immediately upon suspicion of ectopic pregnancy, and, in cases of hemorrhage, received blood transfusion as soon as the bleeding point had been ligated.

Suspicion of ectopic pregnancy should mean to us all, hospitalization, immediate typing and cross matching with quickly available donors, consultation where possible and immediate operation when the diagnosis of ectopic pregnancy has been made.

Placenta Previa and Premature Separation of the Placenta

About one in every twenty obstetric deaths is due to hemorrhage consequent upon one or other of these two conditions, placenta previa predominating two to one.

In the third trimester of pregnancy, uterine bleeding without pain should instantly suggest the likelihood of placenta previa, and uterine bleeding with pain should suggest the possibility of premature separation of the placenta, as should abdominal pain with a boardlike uterus. These patients, no matter how slight the symp-

toms, should be placed promptly under conditions making possible constant supervision and immediate intervention if necessary. They should all be typed and cross matched with quickly available donors. Diagnosis should be made by abdominal and rectal examinations alone in order that if cesarean section is deemed the operation of choice no infection can have been introduced by vaginal examinations.

Morbidity and mortality from these conditions can be reduced only by teaching the public to report bleeding and abdominal pain immediately, by the most conscientious watching of the patient from the advent of the earliest symptoms, by adequate consultation and correct decision as to the diagnosis and the safest method of conducting each individual case, and by preparation for blood transfusion.

In incomplete varieties of placenta previa, when intervention is deemed indicated, if the head is engaged, rupture the membranes and see if the head will tampon the placenta. If the head does not tampon the placenta and stop the bleeding, or if the head is not engaged, introduce the largest sized Voorhees bag possible and keep it taut against the placenta with a one pound weight. The patient should not be left for a moment, so that, when the bag pulls through, if bleeding starts again one can do a quick version and tampon the placenta with the buttocks. If there is sufficient dilatation of the cervix to do a Braxton Hicks version in the first instance, when the head is not engaged, many prefer this maneuver to the use of bags. However, those well versed in the use of bags feel that the chances of getting a live baby are greatly increased if one tampons the placenta and dilates the cervix completely with a bag introduced extraovularly followed by quick version, if necessary for hemorrhage, when the bag comes through. Whatever type of intervention one uses, after its performance, let labor take its course and do not hurriedly deliver by forceful means. Use this time for getting the patient back to good condition by the use of intravenous saline or blood transfusion if and as indicated by the pulse rate and volume and by the blood pressure. After delivery pack the uterus and vagina thoroughly with sterile gauze and leave the packing in for twenty-four hours. Many women are lost from failure to pack the uterus, with resulting postpartum hemorrhage. Where the previa is ob-

viously a lateral variety, and the third stage is perfectly normal and followed by a normal amount of lochia, the packing may be omitted.

For central placenta previa, cesarean section is the operation of choice if no vaginal examinations have been made and no signs of infection are present. Here success depends not only upon strict observations of contraindications but upon ability to choose the best type of section and technical ability after the type is chosen. The Maternal Mortality Report of New York city for the years 1930, 1931 and 1932, showed that one-fifth of all obstetrical deaths, outside of deaths from abortion and ectopic pregnancies, followed cesarean section. This shows that this operation must be chosen with great caution no matter what the indication.

In premature separation of the placenta, where intervention is indicated, bring about dilatation of the cervix as quickly as possible by the use of bags followed by version or forceps if and as indicated. In some cases cesarean section is clearly demanded, to be followed by hysterectomy if a uteroplacental apoplexy of Couvelaire is found to be present.

Postpartum Hemorrhage

Deaths from postpartum hemorrhage approximately equal in frequency the combined deaths from placenta previa and premature separation of the placenta. This subject is very important because it may follow any labor and should be clearly envisaged in every labor and constant endeavor made to avoid it. Postpartum hemorrhage has the following causes: relaxation of the uterus from pure fatigue and shock consequent upon a long hard labor; relaxation of the uterus due to profound anesthesia; failure to minimize the blood loss in the third stage of labor; retained placental remnants; and laceration of the cervix due to operative deliveries through an undilated cervix.

The first requisite is prophylaxis. Make labor as painless as is safely possible. Provide supporting, easily assimilable food and sufficient fluid intake during labor. In long labors assure plenty of rest and sleep. When these measures are carried out, patients usually reach actual delivery in excellent condition. Take great care in reducing blood loss to a minimum in the third stage of labor. Immediately after the birth of the child have the nurse place her hand above the

uterus and give warning of any ballooning of the uterus. This is especially indicated when deep anesthesia obtains. No matter what one's usual custom as to the use of pituitrin following the second stage of labor, it is the opinion of many of us that it should be used, without fail, directly after the birth of the child in long tiring labors and after deep anesthesia. Express the placenta as soon as it has separated. See that the uterus is not forced down in the pelvis. If it is, raise it out the pelvis by pressing upward and backward with fingers immediately above the symphysis pubis. Give the patient 1 c.c. each of pituitrin and sterile ergot by hypo. The uterus should be held for one hour after the delivery of the placenta. After delivery of the placenta see that it is intact and that the lochia is normal in amount after any required repair, before sterile drapes are removed. If bleeding is not normal and will not respond to pituitrin, ergot and holding of the uterus, we should explore the uterus, pack if necessary or repair a bleeding cervix. If one will never attempt to dilate a cervix rapidly or deliver through an undilated cervix he will likely never encounter a cervical hemorrhage. Whatever has been done or needs to be done, start administration of fluids promptly when patients show signs of effects from blood loss, but do not cease your work until the source of the bleeding is found and stopped.

Women should have the uterus held for one hour following delivery of the placenta and should be watched carefully for six hours. They should not be left if the lochia is not normal, the uterus is not firm and the pulse is increasing in frequency. No matter how small the blood loss, falling blood pressure and increasing pulse rapidity should direct the replacement of body fluids by Murphy drip, intravenous saline or blood transfusion as indicated by the severity of symptoms.

Rupture of the Uterus

Whenever rupture of the uterus is suspected after delivery, the uterus should be explored manually and, if rupture is found, immediate laparotomy is indicated, with every method to counteract the effect of shock and hemorrhage. Rupture of the uterus is a very rare condition where the labor or delivery has not been strikingly mismanaged. It is generally consequent upon ill-advised and ill-managed operative pro-

cedures, such as version and breach extraction, or after long and tempestuous labors due to failure to recognize disproportion between the passenger and the passage.

In discussing statistics of obstetric mortality due to all conditions, it has always been a matter of great interest to try to determine approximately what might be considered an irreducible minimum. Many men who have never suffered an obstetric mortality in their practice of many years, begin to wonder if all obstetric deaths are not preventable. Since our last meeting, the remarkable reports of study made by the United States Children's Bureau, of maternal mortality in fifteen states, and by the New York Academy of Medicine, of Maternal Mortality in New York city for the years 1930, 1931 and 1932, have been published and have thrown great light on this question. In the New York investigation, while every circumstance surrounding a case was fresh and available for investigation, the case was inspected and weighed from every angle by a committee of outstanding specialists and placed under the headings: preventable or not preventable. Of the 2,040 deaths, 65.8 per cent were considered preventable. An irreducible minimum of 34.2 per cent was determined. In the 65.8 per cent of preventable deaths, responsibility for the death was placed upon the attendant in 63.3 per cent and upon the patient in 36.7 per cent.

The conclusions of this committee as regards the causes of these preventable deaths are most instructive and we will quote them for the benefit of those who have not obtained a copy of the report.

"First of all, it is evident that prenatal care was inadequate and improper. The patients repeatedly failed to seek prenatal care. Often if they did, it was very late in pregnancy and return visits were neglected."

"It was plain that this arose out of ignorance and misinformation still widespread among the lay public in spite of the persistent efforts which have been made to combat it. It was apparent that women did not know the necessity for prenatal care and failed to understand just what constitutes proper prenatal care. Many patients were ignorant of the gravity of certain apparently mild symptoms which indicated the presence of serious abnormalities. Persistent vomiting was disregarded, repeated vaginal hemorrhage neglected, pain and bleeding early in pregnancy and the milder symptoms of toxemia overlooked."

"Many patients did attempt to obtain prenatal care. They consulted their physician early and returned regularly. But the attendant failed to give proper care. Physical examination was careless and incomplete.

Contractions of the pelvis were overlooked. The severity of complications was repeatedly underestimated and they were improperly treated."

"The high incidence of operative interference during labor was an important factor in the result. More than 45 per cent of the deaths in this series, exclusive of abortion and ectopic gestation, followed operative deliveries, and the death rate per 1,000 live births for operative deliveries was greatly in excess of that for spontaneous deliveries."

"Frequently the operation chosen was the wrong one. Often it was undertaken at an improper time. Manifestly obstructed labors were allowed to continue when it should have been clear that delivery could not be effected from below. Trial labors were frequently too greatly prolonged."

"Special mention must be made of the situation in regard to cesarean section. Many sections were undertaken for improper indications. Many were done after long, exhausting labors. The classical type was repeatedly performed without due regard to the fact that the patient, after a long labor, when membranes had been ruptured and repeated vaginal examinations had been made, was potentially infected. There were many operations performed after previous attempts at instrumental delivery had failed. Frequently these attempts and the final operation were the result of the incapacity of the accoucheur properly to judge the patient's ability to deliver herself. Often the type of operation was one which demanded greater training and skill than the attendant could command."

"The incapacity of the attendants, either in judgment or skill, contributed significantly to the large number of deaths. Their failure to provide proper prenatal care has already been pointed out. The prognosis of delivery was frequently incorrect. Labor was often improperly conducted. The physicians many times were apparently ignorant of the indications and contraindications for interference. Operative procedures were undertaken when there was no indication or a plain contraindication. Labor was terminated by a rapid traumatizing delivery when noninterference was called for. Operative procedures were performed on potentially infected patients. Attendants were tardy in obtaining proper consultations. There was failure to treat severe complications with all the means which should have been available. Difficult obstetrical operations were performed by physicians whose training and experience could not be considered adequate. At times the conclusion that proper asepsis had not been maintained could not be avoided."

"Hospital standards were inadequate in many instances. The actual physical equipment was inadequate in some hospitals. Proper facilities for labor and delivery were lacking. Isolation was not always carried out promptly. In some proprietary hospitals, the operating room was also used as the delivery room."

"Finally, midwife practice entered in as a contributory cause of the high rate. The training of these women was frequently insufficient."

This report shows that we must redouble our

efforts to reduce preventable maternal mortality. Let us continue in every way to impress upon the public the danger of abortion, and the importance of early and continued prenatal care. Let us seek, as an association, to increase the time allotted to obstetrics in undergraduate training, and then impress upon our graduates that the undergraduate training is only an introduction to the practice of obstetrics and that if they intend to handle other than normal cases they should take postgraduate work. Let us encourage all men specializing in obstetrics, who fulfill the requirements, to take the examinations of the American Board of Obstetrics and Gynecology and receive its certificate; and let us continuously teach the public what this certificate of proficiency means, so that in the future women will tend more and more to go to the young man with special training rather than to the young physician who is using obstetrics purely as a means of livelihood until he can afford to give it up, at which time, in many instances, he has become a very competent obstetrician and his experience is then lost to the profession and to the community and a new insufficiently trained man takes his place. This is a fault in the present day mechanics of obstetric practice in this country that to my mind accounts for much mortality and morbidity.

Again we will never advance, and will likely regress, unless we choose more carefully our teachers, specialists, and prophets. Nature has been practicing advanced scientific medicine on man for hundreds of thousands of years and then along comes a man who decides that nature seldom knows when to bring on labor and advocates the frequent induction of labor; another advocates the elimination of the third stage of labor by manual removal of the placenta; another would eliminate the second stage of labor by version or forceps and another takes the palm by eliminating all three stages of labor by cesarean section, in many instances for no rational indication. It has come to the point when every medical student should have explained to him the deep significance of the note in medical magazines that reads: "The Editor accepts no responsibility for the views and statements of authors as published in these communications." Some of these articles are, to my mind, just as sensible and just as dangerous as would be an aviation article that would persuade pilots that because one

man flew safely with passengers one hundred times between two points by blind flying in a very dark and densely foggy night, that that is an indication, even when an emergency does not exist, that blind flying is more safe for the average pilot than visual flying on a clear day. The great majority of our medical writings are sound and safe and not misleading, but some of them are actually dangerous in my opinion, and if they had to appear in a journal of which I were editor, I would print my editor's note about responsibility in red ink.

The time has come when, if we are going to progress in maternal mortality reduction in this country, we must either go back to European methods, the midwife or nurse midwife system combined with European conservatism in specialistic philosophy as regards intervention; or do what to my mind is better, and that is teach our graduate not having had special training in obstetrics but whose education is far greater than that of midwives, and who thus should be able to recognize abnormalities more promptly than midwives, teach them, I say, to call in trained attendants immediately on suspicion of abnormality, as well trained midwives are in the habit of doing. If they will not follow this teaching, the nurse midwife system is more safe, as comparative results compel one to admit. However, we will yet fail to get results unless our spe-

cialists are really well trained and teach and practice greater conservatism based upon a more philosophical respect for the wisdom of nature; and yet a conservatism of the type that has best been defined as "knowing when to be radical."

Summary

Improvement in maternal mortality statistics from hemorrhage can be made only by a more widespread conviction of the necessity for early examination and meticulous prenatal care throughout pregnancy, together with immediate and continuous oversight of the patient after the first sign of bleeding, under hospital surroundings that allow of prompt and adequate intervention, according to indications, with the greatest assurance of safety; by more frequent consultations, and by more frequent use of blood transfusion.

If one will analyze any large number of what appears to have been preventable deaths from hemorrhage, attributable to the attendants, one will see the necessity for increasing the time devoted to obstetric diagnosis in undergraduate training, that abnormality may be diagnosed early; the necessity for postgraduate training for those caring for abnormal cases; and, last, but not least, the teaching and practice of conservative obstetrics to prevent hemorrhage brought about by uncalled-for operative intervention.

ROENTGENOLOGIC DIAGNOSIS OF PLACENTA PREVIA*

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IT IS now somewhat more than two years since we first became aware of the fact that we could demonstrate placenta previa roentgenologically without direct invasion of the uterus. Since that time we have studied a total of about

thirty-five patients who came to us in the third trimester of pregnancy with abnormal uterine bleeding. Fourteen of these showed roentgenologic findings of placenta previa. In all of the thirty-five cases the roentgenological findings were corroborated by the clinical and, in some cases, by the operative findings. In the cases of placenta previa, the clinical diagnosis was

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usually made independently by careful recto-abdominal examination, but the patients were submitted to roentgenologic studies to definitely confirm the diagnosis as an aid in determining the

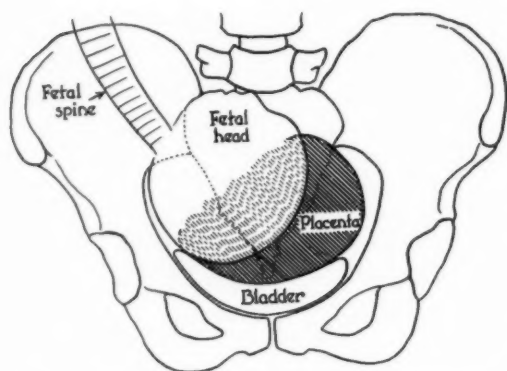


Fig. 1. Diagram of roentgenologic findings in placenta previa, showing the relationship of the placental mass to the urinary bladder and to the fetal head. (Previously published in *American Journal of Roentgenology and Radium Therapy*.)

advisability of surgical intervention. We have found that under careful study the roentgenologic diagnosis can be made with a very high degree of accuracy, and that, if this agrees with the clinical findings, it practically establishes an absolute diagnosis of the condition.

Menees, Miller and Holly² described their method of roentgenological demonstration of the placenta in 1930. They injected a solution of strontium iodide through the anterior abdominal wall directly into the amniotic cavity, thus changing the amniotic fluid into a contrast material in which the placenta and the soft tissues of the fetus were demonstrated as filling defects. This method, however, appears to be associated with considerable danger to the fetus, and may result in premature delivery. Kerr and Mackay¹ modified this method by substituting a derivative of iopax for the strontium iodide. They found their solution non-toxic and non-irritating, but the injection had a great tendency to terminate the pregnancy. More recently Snow and Powell³ have shown the outline of the placenta in normal implantation in the upper segment of the uterus, and have demonstrated that in many cases the normally implanted placenta can thus be shown without injection of contrast material into the amniotic fluid. Their report stated that they had not had occasion to apply this study to placenta previa. Our preliminary report⁴ of the

roentgenological demonstration of placenta previa without contrast material was based on the visualization of a soft tissue mass in the lesser pelvis of a pregnant woman, who presented herself for examination in the third trimester of pregnancy with a history of profuse bleeding from the uterus. A clinical diagnosis of placenta previa was made from the history and physical findings. A flat roentgenogram of the abdomen revealed a soft tissue mass in the lesser pelvis which distinctly separated the fetal head from the slightly filled urinary bladder, and which one of us (Ude) considered to be the placenta in the lower uterine segment. The findings in this case are illustrated in Figure 1. A cesarean section was done by Weum, with delivery of a premature living fetus, and with demonstration of implantation of the placenta in the lower uterine segment completely covering the cervical os.

Following the observation of this first case, we attempted to establish the normal relationship of the pregnant uterus and the fetus to the pelvic structures, especially to the urinary bladder, and to evaluate as diagnostic features the abnormalities described in our first case⁴. As mentioned above, our studies have shown this to be a very accurate method of confirming the presence of placenta previa.

Roentgenologic Technic

Since the identification of a placental mass in the lower uterine segment depends, to a large extent, on an accurate definition of the adjacent structures, we inject a small quantity, not more than forty cubic centimeters, of sodium iodide or other contrast solution into the urinary bladder, after removal of the urine by catheterization. The catheter is then withdrawn. We can thus clearly define the upper margin of the bladder. The roentgenogram is then made with a large sized film, but with the central ray directed vertically over the lower abdomen. The use of a Bucky diaphragm with fast technic is necessary.

Anatomic Relations and Roentgenologic Diagnosis

The body of the uterus normally rests against the upper posterior side of the urinary bladder, and this relationship persists with pregnancy, the intestinal loops and omentum being displaced superiorly and posteriorly. A thin fold of peritoneum dips down between the lower uterine segment and the wall of the bladder. With the

fetal head down in the lower uterine segment, the normal soft-tissue space between the cranial bones of the fetus and the contrast material in the bladder consists of the thin scalp of the fetus, the wall of the lower uterine segment measuring only a few millimeters in diameter, the fold of peritoneum and the relatively thin wall of the bladder. The total diameter of these structures scarcely exceeds one centimeter, and usually the film study reveals it as a narrow band of tissue between the two land-marks. If, however, placenta previa is present, this space is considerably wider than normal, and usually the outline of the placental mass can be defined. Figure 2 illustrates the typical positive findings in one of our recent cases. From this it is self-evident that the head of the fetus must present in the lower uterine segment to make it possible to establish these facts. In a case of transverse position we were unable to apply this method satisfactorily, but it is possible that in breech presentation the outline of the breech may give us a sufficiently clear definition of the upper margin of the placental mass. To this date our experience does not include any cases of placenta previa with breech presentation.

The size and position of the placental mass in the lower uterine segment, together with the nature of the displacement of the fetal head, give us sufficient information to express an opinion whether we are dealing with a central or a partial type of placenta previa. The presence of blood clots, or the presentation of a foot or hand, may confuse the picture, and such possibilities must be carefully considered. However, if the observations have been carefully made, and if they are corroborated by all of the clinical and physical findings, the diagnosis may be made with a very high degree of accuracy, and surgical procedures may be carried out without the least uncertainty as to the nature of the existing condition.

Summary and Conclusions

1. The technical and diagnostic features of the roentgenologic diagnosis of placenta previa are again briefly described.

2. We have now applied this method in more than thirty-five cases of pregnancy which were complicated during the third trimester by abnormal hemorrhage. In addition to this we have

made comparable studies on a number of control cases in order to establish the normal findings.

3. We have found this method of diagnosis very satisfactory, allowing a definite conclusion



Fig. 2. Cystogram showing soft tissue mass between the fetal head and the bladder, characteristic of placenta previa of the central type. Proven by cesarean section. Findings are similar to those shown in Figure 1.

to be reached without invasion of the uterus and without contamination of the genital tract.

4. We urgently advise that clinical and roentgenologic findings should be in agreement before the diagnosis is regarded as final.

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MENOPAUSAL AND POST-MENOPAUSAL BLEEDING

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IRREGULARITIES of bleeding from the genital tract are of importance during the entire life of woman and are of especial significance about the time of and after the menopause. Carcinoma of the cervix occurs most commonly between the ages of thirty and sixty, the greatest incidence being between thirty-five and forty-five, according to Kelly's experience, while Gates and Warren find the greatest incidence between forty and sixty. Johnson and Tyrone in a series of 926 cases found 35.4 per cent between the ages of forty and fifty. Strachan noted that 54 per cent of a series of 300 cases occurred in the post-menopausal period. Strachan quotes three series showing that 29 per cent of 500, 40 per cent of 500 and 72 per cent of 800 occurred in women over fifty years of age. Women under forty are less inclined to neglect irregular bleeding than those nearing the menopause. Physicians as well as patients have been known to ascribe such bleeding to "the change of life" in lieu of undertaking an investigation of the real cause.

Early diagnosis is of paramount importance and will be obtained only when neither patient nor physician courts delay. The cause of the bleeding may be organic or functional. If organic, a diagnosis of a benign or malignant nature must be determined promptly. In order of frequency, primary carcinoma of the cervix, corpus, ovaries, vulva, vagina and tubes occurs. Sarcoma, chorioepithelioma, teratoma, melanoma and endothelioma are relatively infrequent. Metastases in the genital tract may occasionally be the first sign of a malignant growth primary in other organs, such as are found with Krukenberg tumors and with the vaginal metastases from certain nephromas. Invasion of the genital tract by malignant tumors of the rectum and bladder usually occurs after the location of the primary growth has been determined.

Benign organic lesions are most frequently myomata or fibromata, certain ovarian cysts, mucous polyps or inflammatory lesions of the genital organs. Before the menopause it is also necessary to keep in mind incomplete abortions, ex-

trauterine pregnancies and hydatid form moles. Functional bleeding is probably most often due to endocrine dysfunction, but this diagnosis should be made only after proper investigation. Blood dyscrasias, syphilis or focal infections are sometimes the etiological factors.

Diagnosis is of the utmost importance and should be made promptly. A careful history and a painstaking examination should never be neglected. The old dictum, "A finger in the rectum and a catheter in the bladder," may save embarrassment later. Painting the cervix with Lugol's solution as advocated by Schiller may be an aid. The examination is not complete unless a biopsy of any suspicious area on the cervix and a curettage are done, all tissue removed being sectioned and examined by a competent pathologist. If such an examination is made and no cause for the bleeding is found we should keep the patient under observation while focal infections and constitutional diseases are being treated. Organic lesions should be ruled out before attempting endocrine therapy.

Kanter and Klawans reported a study of ninety-eight consecutive cases of post-menopausal bleeding from the records of the Presbyterian Hospital and the Cook County Hospital of Chicago. In this series 68.4 per cent were malignant and 31.6 per cent benign. They conclude that there is no apparent relationship between the type or amount of bleeding and the seriousness of the existing condition, and that parity, length of time in the menopause and duration of active menstrual life are of no particular value as diagnostic aids.

Fahmy of Edinburgh has published an analysis of 937 cases of post-menopausal bleeding from series of cases reported by seven different observers and of the total 180 were taken from private records and 757 from the records of hospital clinics in Edinburgh and Glasgow. In this large number he found 43.12 per cent malignant and 56.88 per cent benign.

While any small series of cases may be misleading from a statistical point of view, certain lessons of practical value may be drawn from

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them. With this in mind I have taken a series of records of my private patients all over forty years of age, and have divided it in three groups: pre-menopausal, menopausal and post-menopausal.

In the first group there had been no definite symptoms such as are usual during the menopause. The ages ranged from forty to fifty-five years. The average age was forty-five years. Each of the second group had had some symptoms of the menopause such as hot flashes, periods of amenorrhea or diminished flow. In this group the ages were from forty to fifty-five years. The average age was forty-seven. The post-menopausal group was selected on the basis used by Fahmy, *i.e.*, at least six months amenorrhea before the irregular bleeding had begun. The ages of this group were forty to seventy-five years and the average 57.6 years. The menopause is a gradual physiological process and therefore it is difficult in some cases to be sure that an individual record is placed in the correct group but I believe that the classification used by Fahmy will give a fair estimate. In my experience the majority of women living in this climate cease menstruating between the ages of forty-five and fifty, but there are a considerable number who have had their menopause before forty-five and a larger number who continue to menstruate regularly after fifty.

In this series I have listed only cases in which pathological examination of organs removed at operation, curettings, biopsies or postmortem findings were available and an occasional case in which diagnostic curettage was refused but the patient observed for a period of three or more years after the cessation of irregular bleeding and was found normal. The heading "Benign, cause undetermined," includes all cases in which a pathological diagnosis of normal endometrium, hypertrophy or hyperplasia of endometrium, senile or atrophic endometrium, was made and no other lesion found to account for the bleeding. Such cases are probably of endocrine origin. There was more than one possible cause of bleeding in several instances.

All types of bleeding are included, whether bloody discharge, spotting, continuous or interrupted bleeding of any degree of severity. In the pre-menstrual group we also included severe menorrhagia. Many of these patients had more or less severe secondary anemia. I have seen one

TABLE I

Diagnosis	Pre-Menopausal	Menopausal	Post-Menopausal	Type of Bleeding in Post-Menopausal Cases			
				Bloody Discharge	Spotting	Moderate	Profuse
Carcinoma cervix.....	4	0	5	0	4	1	0
Carcinoma corpus.....	1	0	6	1	0	2	3
Carcinoma tubes.....	0	0	1	0	1	0	0
Carcinoma ovaries.....	2	0	0	0	0	0	0
Carcinoma pelvis							
Probably ovarian.....	0	0	1	0	1	0	0
Probably uterine.....	0	0	1	0	1	0	0
Vaginitis senile.....	0	0	8	6	2	0	0
Vaginitis trichomonas.....	0	0	5	5	0	0	0
Vaginitis ulcer (pessary).....	0	0	1	0	1	0	0
Prolapse uterus (ulcers).....	0	0	5	0	5	0	0
Granulation tissue, vaginal vault, post-operative.....	0	0	2	0	2	0	0
Cervical polyps.....	5	9	12	4	6	2	0
Cervical erosion.....	0	1	0	0	0	0	0
Uterine polyps.....	5	2	2	0	2	0	0
Myoma.....	27	10	4	0	4	0	0
Adenomyoma.....	1	0	0	0	0	0	0
Chronic P.I.D.....	0	0	1	0	0	1	0
Chocolate cysts (ovaries).....	0	1	1	0	0	1	0
Fibrosis uteri.....	5	0	0	0	0	0	0
Tubal pregnancy.....	2	0	0	0	0	0	0
Incomplete abortion.....	4	0	0	0	0	0	0
Ovarian cyst.....	1	0	0	0	0	0	0
Prolapse urethra.....	0	0	1	0	1	0	0
Urethral caruncle.....	0	0	1	0	1	0	0
Urethral polyps.....	0	0	1	0	1	0	0
Benign (diagnosis undetermined).....	9	16	13	1	6	5	1
Totals..	66	39	71	17	38	12	4

patient, aged thirty-two in whom severe menorrhagia was the only symptom of a cancer of the corpus. The history of irregular bleeding is frequently brought out only after careful questioning. One woman came to me complaining of a lump in the breast which she feared might be cancer. A careful history revealed the fact that she had had continuous vaginal bleeding for a year which she thought was "the change of life." She had a cyst in the breast and a cervical carcinoma 6 cm. in diameter. In two instances the patients complained of genital bleeding which proved to be due to urethral lesions. I have not included any case in which the complaint was of blood in the urine. One woman complained of rectal hemorrhages and occasional vaginal bleeding, the cause being a large carcinoma of the rectum and a cervical polyp which was probably benign. In my experience bleeding has not

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TABLE II

(From Kanter and Klawans)	Type of Bleeding				
	Num-ber	Dis-charge	Spot-ting	Mod-erate	Pro-fuse
Cancer cervix.....	51	2	16	17	16
Cancer corpus.....	11	0	4	1	6
Cancer vagina.....	1	0	1	0	0
Cancer vulva.....	2	0	0	1	1
Cancer ovary.....	1	0	0	1	0
Zona granulosa.....	1	0	0	1	0
Senile vaginitis.....	3	0	3	0	0
Urethral caruncle.....	2	0	1	1	0
Fibromyoma.....	7	0	4	0	3
Cervical erosion.....	3	0	3	0	0
Prolapse.....	5	1	2	1	1
Cervical polyp.....	8	1	3	4	0
Vaginal ulcer.....	1	0	1	0	0
Fibrosis uteri.....	2	0	0	1	1
Total.....	98	4	38	28	28

Menopause 30-57.
Majority 45-51

been present in a large percentage of ovarian malignancies.

Kanter and Klawans state, "All cases of post-menopausal bleeding should be considered malignancies until proved otherwise," and in this dictum we agree. I doubt if their series will give a fair cross section of the percentages of benign and malignant lesions in an ordinary gynecological practice. All hospital clinics equipped to treat cancer should show a larger percentage of cancer patients than would be found in the average group of women who consult some physician for bleeding after the menopause. However, in any such group the number of malignant lesions found is large enough to make the diagnosis of "benign or malignant" a serious responsibility.

Table I summarizes the types of lesions causing abnormal bleeding in the three groups. The types of bleeding in our post-menopausal cases are also shown in this table. Comparing this table with tables from Kanter and Klawans it is found that their conclusions are supported by this series. Fahmy's conclusions in respect to the importance of the type of bleeding also agree with these findings.

In my small series 19.7 per cent were malignant and 80.3 per cent benign. In one case a carcinoma occurred in the cervical stump following

TABLE III

(From Fahmy)	Num-ber of cases	Per-centage
1. Carcinoma of cervix uteri.....	241	25.72
2. (?) Ovarian dysfunction, diagnosis doubtful.....	141	15.05
3. Polypus: mucus and fibro-adenomatous.....	114	12.17
4. Carcinoma of corpus uteri.....	93	9.82
5. Prolapse: genital (with or without friction ulceration).....	86	9.17
6. Fibromyoma and fibroid polypus: uterine.....	64	6.83
7. Cervicitis and vaginitis.....	40	4.27
8. Ovarian neoplasm: malignant.....	32	3.52
9. Caruncle of urethra.....	27	2.88
10. Senile endometritis.....	20	2.13
Ovarian neoplasm: benign.....	20	2.13
11. Carcinoma of vagina.....	12	1.28
Vaginal ulceration due to pessary.....	12	1.28
12. Carcinoma of vulva (labium).....	10	1.07
13. Sarcoma of uterus, corpus, fibroid and retroperitoneal.....	8	0.85
14. Carcinoma of clitoris.....	3	0.32
15. Carcinoma of urethra.....	2	0.21
Tuberculous endometritis.....	2	0.21
Prolapse of urethra.....	2	0.21
Myxo-fibroma of vagina.....	2	0.21
Hyperpiasis (constitutional, e. g. cirrhosis of liver).....		20.21
16. Sarcoma in cervical stump.....	1	0.11
Carcinoma of peritoneum (second-ary to breast tumor).....	1	0.11
Malignant papilloma of bladder.....	1	0.11
Tuberculous granuloma of urethra.....	1	0.11
Total.....	937	99.98

a hysterectomy done by another surgeon ten years before. I performed a diagnostic curettage and a biopsy of the cervix in another case two and a half years before the patient returned with a carcinoma of the cervix. The cervical tissue removed was examined by a competent pathologist. The two patients with bleeding from granulation tissue in the vault of the vagina had been operated upon in another city some weeks before. The ages of the two patients who had tubal pregnancy were forty and forty-one, and incomplete abortions were present in women of forty, forty-two, forty-three, and forty-nine years. In neither case of chocolate cysts of the ovaries were we able to demonstrate endometrial tissue.

Conclusions

Post-menopausal bleeding should be considered

ESSENTIAL THROMBOCYTOPENIC PURPURA—KOHLBRY

to be due to a malignant lesion until careful investigation has proven otherwise.

There are many benign lesions that cause postmenopausal bleeding but any irregular bleeding should be investigated promptly.

If after thorough examination the cause of bleeding has not been discovered the patient should be kept under close observation for several years.

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ESSENTIAL THROMBOCYTOPENIC PURPURA*

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THROMBOCYTOPENIC purpura, or purpura hemorrhagica, was first separated as a distinct entity from other types of bleeding by Werlhof in 1771-75. It has frequently been spoken of as Werlhof's disease.³

Purpura as a whole may be divided into two types: (1) the thrombocytopenic, in which there is a deficiency of platelets, and (2) the non-thrombocytopenic.

Non-thrombocytopenic purpuras⁶ show no deficiency in the clotting power of the blood. The cause of bleeding is usually a dysfunction of the capillaries due to injury to the individual cells thereof or their binding substances. Allergic purpuras such as Schoenlein's and Henoch's types fall into this group. The bleeding which occurs in scurvy is another familiar example.

Thrombocytopenic purpura can be subdivided into two groups: the symptomatic, and the essential. The symptomatic types of purpura include all cases in which the platelet deficiency is merely an indication of a severe generalized recognizable condition. Greenwald and Sherman⁴ classify four different groups of symptomatic thrombocytopenic purpura according to etiology: (1) thrombocytopenia following dyscrasia of the blood (leukemia, pernicious anemia, aplastic anemia, and agranulocytosis); (2) thrombocytopenia accompanying acute infection (typhus, general sepsis); (3) thrombocytopenia accompanying poisoning with organic chemicals (benzol or arsenic compounds); (4) thrombocytopenia sub-

sequent to destruction of the bone marrow by granulation tissue (Hodgkin's disease, Gaucher's disease).

These types of purpura are mentioned in passing merely to differentiate them from the essential type with which this paper deals.

Essential thrombocytopenic purpura is characterized by the absence of any known disease which can be held responsible for the deficiency of platelets. The hemorrhages which occur in this disease vary greatly as to site and amount. They may be extremely severe and intractable, leading to death within a few days, or mild but protracted with long periods of remission.

Cases of essential thrombocytopenic purpura occur most frequently before the third decade. An analysis of ninety cases by Whipple⁵ showed 81 per cent occurring before the age of forty. It is a not uncommon disease of children. Females are more commonly affected than males.⁹ The patient is usually of normal health until symptoms of bleeding occur. Bleeding may occur from any site. Purpura, that is, bleeding into the skin itself, is not a necessary symptom. It, however, is very apt to be present, resulting especially from mild trauma. It may vary from generalized petechiae to larger ecchymoses. Bleeding from the nose is perhaps most common. Other frequent sites are the gingival margins and the kidneys. Cerebral bleeding occurs occasionally. Multiple sites of bleeding commonly occur.

There are few symptoms other than the bleeding. The resultant anemia depends upon the severity and duration of the hemorrhages. The

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spleen may or may not be enlarged. In about one-half the cases it will be found of normal size.¹⁰ Enlargement of the spleen is not significant in prognosis.⁸

The diagnosis of essential thrombocytopenic purpura rests upon the following blood findings: (1) increased bleeding time; (2) decreased platelet count; (3) non-retractability of the clot; and (4) increased capillary permeability as determined by the capillary resistance test.

Increase in bleeding time is characteristic of this disease. A normal bleeding time (Duke's method) is considered to be from one to three and one-half minutes. In this type of purpura bleeding times varying from ten minutes to several hours are not infrequent. In thirty-five cases collected from the literature by Stewart¹⁰ an average bleeding time of twenty-five minutes was obtained. The increase in bleeding time does not necessarily parallel a decrease in platelets. Jones and Tocantins⁵ are of the opinion that the bleeding time is the best available index in determining the course of the disease.

The coagulation time is usually within normal limits. Such limits are two to seven minutes (capillary tube method).

Normally the platelet count is usually found to fall between 250,000 and 500,000 per cubic millimeter. The platelet count is always decreased in this disease. When it falls below 100,000 there is usually active bleeding. Figures as low as 10,000 per cubic millimeter have been reported. The number of platelets does not necessarily determine the tendency to hemorrhage. Hemorrhagic phenomena have been reported when the platelet count is relatively high; on the contrary counts of less than 100,000 have been observed without hemorrhage. Changes in the quality of the platelets themselves have been mentioned. Kugelmass⁶ describes means of platelet study, including tests for platelet fragility.

Normally blood allowed to stand in a test tube will clot so that there is complete retraction of the clot with squeezing out of the serum in twenty-four hours. Retraction of the clot is usually delayed or even absent in this disease. This phenomenon is believed to be associated with the platelet deficiency, that is, the platelets are considered responsible for the retraction of the clot and expression of the serum.

Capillary hyperpermeability or weakness is essential for hemorrhage to occur. It is another

important factor in this disease. The condition of the capillaries can be ascertained by the capillary resistance test (Rumpell-Leeds test). A blood pressure cuff is applied to the arm at mean blood pressure for five minutes. If, within a few minutes after removal of the cuff, purpuric spots appear on the arm below it, the test is considered positive. The occurrence of purpuric spots measuring one centimeter or more in diameter is almost pathognomonic of thrombocytopenic purpura.

With the exception of the above-mentioned findings the blood picture as a general rule is fairly normal. The amount of secondary anemia depends upon the severity of the hemorrhage. Evidence of blood regeneration with increase of reticulocytes is usually found. The fragility of the red cells is normal.

Pathologically there are few findings other than the hemorrhages and resultant evidence of anemia. Of the seven spleens removed in McLean, Kreidel and Caffey's series⁸ none showed specific diagnostic changes. Other authors have noted perisplenitis and increased fibrosis. In the spleen of DeSanctis and Allen's case³ there were what were considered to be proliferated endothelial cells. Many cells of the reticulum contained engulfed platelets and a diagnosis of hyperplasia of the splenic pulp was made. Coster¹³ pointed out evidences of increased phagocytosis of platelets by endothelial cells, of increased permeability of the capillary walls, and of dysfunction in the formation of platelets. One of the hazardous features of this disease has been the occasional intracranial hemorrhage.

In the discussion of etiology it would seem wise to first recall the mechanism involved in blood clotting. This matter is still confused. However, the classic theory of the present in its simplest form has been stated by Cooley¹ as follows:

"It is quite generally agreed that there are present in the circulating blood, prothrombin, calcium, fibrinogen, and possibly a small amount of the liquid cephalin, and that the fluidity of this mixture is maintained by something for which we use the term antithrombin. When the blood is shed, changes take place which are probably started by disintegration of the platelets. We see that they contain cephalin, probably an additional amount of prothrombin, and therefore add these to the shed blood as compared to the circulating blood. As soon as the blood is shed, the platelets become agglutinated, and undergo disintegration with the libera-

tion of cephalin, which in the presence of calcium, probably serving as a catalyst, converts prothrombin to thrombin. The thrombin and fibrinogen in turn unite to form fibrin, which is deposited as a network of fine needles, enmeshing the corpuscles. Ultimately this mass of fibrin needles and corpuscles contract, producing the firm clot and extruding the serum."

LeSeurd and Pagniez⁸ have shown that the platelets contain a retracting ferment which is liberated in the clotting process and is responsible for the contraction of the fibrin fibers which squeeze out the serum.

Diminution in number of the platelets has been stated to be a characteristic finding in this disease. There is much discussion as to how this is brought about. One school of thought maintains that there is an abnormal destruction of the platelets by the cells of the reticulo-endothelial system, most notably in the spleen, while the other as staunchly believes that the spleen elaborates a myelo-toxin which inhibits normal production of the platelets by the megakaryocytes of the bone marrow. Kugelmass⁹ feels that the site of the disease is primarily in the spleen, where there is destruction of the platelets, and secondarily in the bone marrow, where platelet formation is interfered with. The decided improvement which follows splenectomy, especially in chronic cases, points to the spleen as the main culprit. Some of the failures after splenectomy, however, may be due to exhaustion of the megakaryocytes in the bone marrow. Splenectomy also may fail because of the fact that other portions of the reticulo-endothelial system are as much at fault as the spleen and continue their destructive action even after its removal.

The platelets, as noted above, are indispensable factors in blood clotting. Deficiency in their number is the commonest cause of pathological hemorrhage.⁶ The platelet content of the blood is closely related to the length of the bleeding time as well as to the retractability of the clot. Bedson² believes that in addition to decrease in platelet count one must have injury to the capillary walls; in other words, that purpura will not occur from platelet deficiency alone.

The primary cause of either essential thrombocytopenic purpura is likely an infection or a toxin which either affects the reticulo-endothelial system, especially in the spleen, or causes some abnormality of the bone marrow. The general impression seems to be that the platelets are destroyed by an overactive reticulo-endothelial sys-

tem with its main focus in the spleen. Jones and Tocantins⁵ believe that this condition is a deficiency disease occurring in a person with a so-called hemorrhagic constitution, the acute phase of which is precipitated by an infectious process or by other substances which affect capillary permeability.

Many authors believe that infection is responsible for the initiation of the series of changes which finally result in bleeding. Such infection may be acute or chronic, obvious or hidden. In McLean, Kreidel, and Caffey's series⁸ twelve of the twenty-one cases reported had had recent definite infection. The delay in appearance of hemorrhagic evidences after these infections suggests to them the possibility that allergy may be a factor in the thrombocytopenia through affection of the megakaryocytes. Removal of infectious foci may in itself cure the disease. There is general agreement that such infectious foci should be cleared up, as they are known to predispose to continuation of the purpura or to cause recurrence of the disease even after splenectomy.

When we come to prognosis it must first be remembered that spontaneous recovery is by no means unusual. Eleven cases in a group of fifty-three reported by one author⁵ fall into this category. Periods of freedom from hemorrhage are not uncommon and may last weeks or years. The prognosis varies with the individual case, depending upon its severity and response to treatment. In general, however, the tendency to recovery is good. There are some acute fulminating cases which go on to fatal outcome regardless of therapy.

Treatment.—Patients with this disease usually present themselves during the actively bleeding state. If bleeding is not controlled by simple measures, transfusion is the most effective remedy. In emergencies the intramuscular injection of fifty cubic centimeters of whole blood may suffice to arrest the hemorrhage.⁶ Larger transfusions from a suitable donor, however, not only supply platelets but seem to stimulate platelet formation. Such transfusions may have to be repeated every four days, paralleling the average life of a platelet. In severe cases they may be necessary several times within twenty-four hours. Contemplated splenectomy is usually preceded by transfusion and a donor is kept at hand in order to repeat it after operation when necessary.

Most authors favor giving fairly large amounts of blood. Jones and Tocantins⁵ advise a dosage of one hundred to three hundred cubic centimeters for children. Twenty-four of their fifty-three patients were tided over by this procedure so that splenectomy was avoided.

Even if the platelet count does not materially increase, transfusion may help to reduce the bleeding time. Sanford¹ has been successful with intraperitoneal blood injection; other authors have used it without success. The use of citrated blood usually gives good results. It should certainly be used when an emergency exists.

Bleeding as a rule does not cease until twenty-four hours or more after transfusion. One would expect, if the increase in platelets due to the injected blood were the vital factor in arresting hemorrhage, that it would stop immediately. As a matter of fact, however, the favorable effect of transfusion usually becomes manifest two to five days later.

As to other methods of control in the acute case, most authors deprecate the use of preparations directed towards the stimulation of clotting, such as thromboplastin. Cooley,¹ however, has stated that thromboplastin injections have been successful in his hands when transfusion has failed.

Injections of antivenin have been successful in several instances.^{2,12} The serum prepared by the use of Bothrops Atrox Venin seems especially desirable. This snake, the South American Fer-de-lance, elaborates a venom which is far more apt to produce hemorrhage through a disturbance of capillary permeability than are the venoms of our North American poisonous snakes. The serum prepared through its animal injection should accordingly be more efficacious in arresting hemorrhage. It may be given subcutaneously in ten cubic centimeter dosage or even intravenously in fulminating cases. The usual care in the use of injections of any horse serum should be exercised.

Granted that transfusion has been successful in controlling the acute bleeding, further treatment is indicated. Kugelmass⁶ believes that proper diet is of great service. A diet high in protein and fat seems to encourage clotting. The fat intake, particularly in the unsaturated lipids, appears to parallel the level of the platelets.⁷

Ultraviolet light therapy may be useful as an adjuvant as it is thought to stimulate platelet in-

crease. Extra Vitamin D, as viosterol, is recommended by some. Liver feeding, in addition to improving the general hemopoietic activity, seems to increase the platelets.¹ Others recommend iron.⁵ Roentgen therapy has been used. Calcium is useful in decreasing capillary permeability.⁶ It may be given orally but action is more prompt when it is given intravenously as a 10 per cent solution of either the gluconate or chloride, ten to twenty-five cubic centimeters being injected slowly. Gelatine also tends to arrest bleeding.⁶ It can be fed as a ten per cent solution or given in the same strength intravenously, twenty to forty cubic centimeters being injected at one time.

The elimination of foci of infection must be instituted during this period when active bleeding has been controlled. It will frequently result in a cure.

This brings us to the last important procedure in the control of this disease, namely, splenectomy.

The chief requisite for success in splenectomy is a correct diagnosis. Next in importance comes the choice of the proper time for operation. The spleen should be removed only in those patients who, in spite of adequate treatment by other means, have repeated recurrences of symptoms, or in those in whom symptoms are sufficiently severe to threaten life. Operation is far more successful in the chronic than in the acute case. One should therefore use all available methods to carry the patient over into the chronic stage if possible before instituting splenectomy. If this cannot be done operation is indicated even in the acute case. Good results can be expected in about 70 per cent of the cases if operation is performed during the chronic stage.

Payr¹ reported thirty-four cases in which ligation of the splenic artery was carried out. His results, though slower, were good. As there is less shock in this procedure it is less dangerous. Further trial of this method may prove it very valuable.

Results of splenectomy are often dramatic. Hemorrhage may cease almost at once. The platelet count rapidly rises within twenty-four hours to levels as high as a million per cubic millimeter. It subsequently falls but usually remains in the higher ranges.⁸

Even in apparently properly selected cases failure may occur. As stated previously this may

be due to the fact that the platelet deficiency is caused by faulty production in the bone marrow rather than by excessive destruction in the spleen; that there may still be present in the remaining reticulo-endothelial system a focus of platelet destruction capable of continuing the process; or that there is a supernumerary spleen.

Case Report

This patient, a boy, was first seen on January 10, 1925, when he was two years old. Examination showed him to be a normal child with the exception of a right inguinal hernia. During the following months he was seen several times because of a cold, and later a follicular tonsillitis with a complicating otitis media. In May, 1925, tonsillectomy was advised because the tonsils were hypertrophied and showed evident chronic infection. In October, 1925, five months later, he had his first evidence of bleeding, a nosebleed. This responded to cauterization of the septum. At this time the tonsils continued to be chronically infected but removal was not accomplished.

His next visit occurred in June, 1926, with another nosebleed. Examination revealed, in addition, numerous ecchymoses on his body. On questioning, his mother stated that the child bruised easily. By this time tonsillectomy was definitely agreed upon by the parents and he was hospitalized for a blood examination previous to operation. Laboratory study reported his hemoglobin 60 per cent, the red blood cells 3,650,000 and the white blood cells 10,000. The differential count was normal. The coagulation time was five minutes, the bleeding time eighteen minutes and the platelet count 150,000. The clot retraction test was poor. He was accordingly believed to be a case of thrombocytopenic purpura and sent home with appropriate instructions, including calcium by mouth, to prepare for tonsillectomy.

One month later (July 1926), he returned to the hospital. No improvement in his blood findings had occurred. Accordingly he was given a transfusion of 350 cubic centimeters of citrated blood intravenously. After transfusion his platelet count was 140,000 and his clot retraction test still weak but the bleeding and coagulation time were normal. Tonsillectomy was performed the following day. During operation he bled profusely but this was controlled by packing. No severe bleeding occurred postoperatively.

The following month (August 1926), he again reported with the history of six or seven nosebleeds during the interval. His body again showed scattered purpuric areas. The spleen was not palpable and had not been palpable previously. From this time until his entrance to the hospital in February 1927, a period of six months, he had only one nosebleed, which had occurred two weeks previously. On the day of his admission he had had a nosebleed lasting seven hours. Examination showed him decidedly pale, with active nasal hemorrhage and three or four scattered ecchymoses on the body. His hemoglobin was 30 per cent, red

blood count 2,100,000, white blood count 7,000 and the differential blood count normal. The platelet count was 30,000 per cubic millimeter, the coagulation time three and one-half minutes, the bleeding time twelve minutes. There was very little clot retraction in twenty-four hours. His nose was packed and thromboplastin given, followed the next day by five hundred cubic centimeters of citrated blood intravenously. His general condition improved after transfusion but he continued to bleed from the nose. Accordingly he was given four cubic centimeters of ten per cent calcium chloride intravenously, following which the bleeding ceased and he was discharged.

He returned five days later because of recurrence of bleeding. Blood counts again showed a decided anemia but there were definite evidences of blood regeneration. His platelet count was 140,000, the clot retraction test poor, and the capillary resistance test positive. He was again given calcium chloride intravenously on two occasions, followed two days later by five hundred cubic centimeters of citrated blood intravenously. This improved his general condition but his nasal bleeding continued, accompanied by fresh crops of petechiae on the body. On one occasion his spleen was palpated. Splenectomy was first considered. After discharge his nosebleeds and petechiae continued but he made steady general improvement. Generalized ultraviolet treatments were used. In April 1927, one month later, an x-ray treatment was given over the spleen.

In July 1927, Dr. Isaac A. Abt demonstrated him before the annual State Medical meeting in Duluth, confirmed the diagnosis of essential thrombocytopenic purpura, and advised splenectomy. This, however, was not permitted by the parents. He was lost sight of for a year until August 1928, when he reported in fairly good condition. The parents stated that he continued to show ecchymoses off and on but that the nosebleeds were much less frequent. His blood counts were practically normal, the bleeding time six minutes, and the platelet count 180,000. Again in July 1930, two years later, he reported doing well, bleeding occurring only after trauma.

I saw him again in May 1934, one month ago. His parents stated that he was doing very well. During this whole spring he has had only two very mild nosebleeds. He still has a tendency to bruise occasionally. Examination showed him to be in good general condition with no unusual findings. At this time his blood check-up showed the following: hemoglobin 75 per cent (Sahli), red blood count 4,600,000, white blood count 12,000, differential blood count normal. The platelet count was 310,000, coagulation time four minutes, bleeding time two minutes, capillary resistance test negative. After one hour his blood clot showed a slight margin of clear serum, after two hours a definite margin. Complete retraction of the clot occurred within fifteen hours, a normal figure.

Conclusions

1. A résumé of the recent literature of essential thrombocytopenic purpura is presented.
2. The history of such a case is appended. This case serves to illustrate the likely causal relationship of chronic infection, in this instance tonsillar. It also illustrates the known fact that some patients may be tided over the acute period of this disease by the aid of transfusion without recourse to splenectomy. This patient has shown only minimal bleeding in the past six years. He, therefore, is enjoying at least a long period of remission with an excellent prospect of ultimate cure.

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ELECTROCARDIOGRAPHY AS A DIAGNOSTIC ADJUNCT IN THE ANGINAL SYNDROME OF CORONARY SCLEROSIS*

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TWO thousand cases, in which the diagnosis of the anginal syndrome associated with coronary sclerosis was made, form the basis of this study.

The term angina pectoris has come into very unorthodox usage, far removed from Heberden's original teaching, often being applied to the painful symptoms attending any or all forms of heart disease. In order to avert misunderstanding, I use the term anginal syndrome and modify its use by affixing its etiology, which in the present consideration is coronary sclerosis.

It is an acknowledged fact that, in approximately 25 per cent of the cases, the diagnosis of coronary sclerosis with the anginal syndrome rests solely on the subjective phenomena of the disease. Thus, under certain conditions in which, for various reasons, the patient may willfully refuse to acknowledge the occurrence of the syndrome, the examining physician may inadvertently be led to believe that the heart is normal, and so commit himself.

In a consideration of patients with coronary disease, it is essential to separate them into certain clinical groups for the reason that associated or consequent conditions may so alter the pathologic processes as completely to confuse the inter-

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pretation of the resulting electrocardiographic findings. For example, when the anginal syndrome forms the basis of selection of patients with coronary sclerosis, we at once become confronted with the fact that, in an appreciable number of cases, healed cardiac infarction consequent to coronary thrombosis occurs. This complication, even though it may be a relic, often results in the persistence of electrocardiographic abnormalities. The same is true of hypertension, which occurs in almost half the cases.

The 2,000 cases that form the basis for this study were grouped as follows: Group 1, anginal syndrome in cases of healed cardiac infarction, 282 patients (14.1 per cent); Group 2, anginal syndrome in cases of hypertension, 915 patients (45.7 per cent); and Group 3, anginal syndrome in cases without cardiac infarction or hypertension, 803 patients (40.1 per cent).

The electrocardiogram always reveals abnormalities during the stage of acute cardiac infarction unless death occurs within the first few hours. It is of course necessary to obtain daily electrocardiograms in order to observe the transitional changes as they occur, and to permit their proper interpretation. Such observation also usually permits localization of the infarct. Complete healing of the infarct normally occurs in ninety days, and the electrocardiogram rarely returns to normal in less than six months or a year and remains permanently altered in about 25 per cent of the cases. A second factor may influence the electrocardiogram in cases in which cardiac infarction has healed, namely, cardiac hypertrophy. It has been clearly shown that cardiac hypertrophy may occur in cases of healed cardiac infarction, particularly when the infarct was large, and predominantly in cases in which multiple infarcts have occurred. A review of the electrocardiographic changes consequent to acute cardiac infarction is beyond the scope of this paper, but the residual abnormalities will be considered. It is well known that hypertrophy of the left ventricle consequent to hypertension produces electrocardiographic changes. Therefore, this influence must be judiciously appraised when the anginal syndrome accompanying coronary sclerosis is considered. The electrocardiogram frequently records hypertrophy of one ventricle or the other, as expressed by the predominant strain. Minor changes which often are not convincing are observed in left and right axis devia-

tion but, when hypertrophy is well marked, T wave negativity occurs which is convincing evidence. For instance, in conditions that produce predominant strain on the left ventricle and its ultimate hypertrophy, T wave negativity in Lead I or Leads I and II frequently occurs. This is especially seen in cases of hypertension, of aortic stenosis and less frequently of aortic insufficiency.

In contradistinction to this status, conditions producing predominant strain on the right ventricle and its ultimate hypertrophy cause T wave negativity to occur in Leads II and III. This is prone to occur in diseases such as arteriosclerosis of the pulmonary artery, marked pulmonary emphysema or fibrosis, and at times in pure mitral stenosis.

The remainder of the patients (Group 3), who had neither cardiac infarction nor hypertension, are presumed to represent uncomplicated cases of coronary sclerosis. A possible error in the selection of this group must be acknowledged in that some patients may have experienced previous cardiac infarction which was not recognized at the time, and later, at the time of examination at the Clinic, the history of previous coronary thrombosis was not mentioned or was overlooked. It is also possible that, in some cases, hypertension had occurred but spontaneously became lowered to attain the range of accepted normal. These cases represent varying degrees of coronary sclerosis, some in which the arteries remain patent, others in which the tendency for obliteration of the lumen occurs, and in which the outstanding pathologic picture is myofibrosis.

The presentation of statistics dealing with electrocardiographic findings in a large series of cases becomes a difficult and an involved problem owing to the fact that the abnormalities encountered in a single case are frequently multiple. The presentation becomes further complicated by the necessity of dividing the material into the three clinical groups already described. Although complete analysis of the material is presented in Tables I to IV, for those who may be interested in the detailed computation, I will confine my remarks to the predominant findings based on their total values as they occur in the clinical groups.

The average duration of the anginal syndrome prior to examination at the clinic was two and eight-tenths years. Detailed data regarding duration cannot be considered now.

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Table I
COMPARATIVE PERCENTAGE OF THE INCIDENCE OF ELECTROCARDIOGRAPHIC FINDINGS AMONG 2000 PATIENTS WITH THE ANGINAL SYNDROME OCCURRING IN CORONARY SCLEROSIS

Electrocardiographic findings	Total findings Group			One finding present Group			Multiple findings present											
							Incomplete bundle branch block Group			Complete heart block Group			Auricular fibrillation Group			Auricular flutter Group		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
T wave negativity																		
Lead I	24.8	20.5	15.3	19.5	17.6	12.6	2.8	1.3	1.4				0.1	1.0	0.4	0.1	0.2	0.1
Leads I and II	6.7	10.5	4.6	5.0	7.8	3.2	0.7	0.5	0.7				0.8	0.2	0.1		1.1	1.3
Leads II and III	23.0	2.7	11.8	10.6	2.2	8.6	1.1	0.1	0.6				0.7		0.2		11.0	0.4
Leads I, II and III	5.0	2.6	3.6	3.5	2.2	2.5	0.4	0.3	0.5						0.2		1.1	0.1
Biphasic T waves																		
Lead I	3.9	9.6	3.7	3.5	8.1	2.5		0.8	0.6								0.4	0.8
Leads I and II	2.1	2.5	1.4	1.4	2.1	1.2	0.4		0.1				0.1				0.4	0.3
Leads I, II and III	1.4	2.1	1.0	0.7	2.0	0.6	0.4	0.1	0.2								0.4	0.1
Conduction defects																		
Complete bundle branch block	1.4	2.5	3.6	1.4	2.5	3.6												
Incomplete bundle branch block	7.8	5.5	5.2	2.1	2.0	1.0							0.3	0.1	0.1			
Delayed a-v conduction		0.1	0.2		0.1	0.2												
Complete heart block	0.4		0.1	0.4														
Disturbances of rhythm																		
Auricular fibrillation	2.8	3.1	2.5	1.1	1.3	1.5										0.2		
Auricular flutter		0.7	0.1															
Nodal tachycardia		0.1	0.1		0.1	0.1												
Miscellaneous																		
Lengthened Q wave in lead III	23.0	6.9	10.2	7.4	4.8	5.4							0.4					
Normal	20.6	38.0	46.1															

Group 1: Anginal syndrome in cases in which cardiac infarction was healed.

Group 2: Anginal syndrome in cases in which there was hypertension.

Group 3: Anginal syndrome in cases in which cardiac infarction and hypertension were not present.

Table II
COMPARATIVE INCIDENCE OF THE ELECTROCARDIOGRAPHIC FINDINGS IN 282 PATIENTS (14.1 PER CENT) WITH THE ANGINAL SYNDROME AND HEALED CARDIAC INFARCTION. PERCENTAGE BASED ON TOTAL GROUP OF 2000 CASES

Electrocardiographic findings	Total findings		One finding present		Two findings present						More than two findings
					Incomplete bundle branch block		Auricular fibrillation		Lengthened Q wave in Lead III		
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	
T wave negativity	70	24.8	55	19.5	8	2.8	3	1.1	4	1.4	
Lead I	19	6.7	14	5.0	2	0.7			3	1.1	
Leads I and II	65	23.0	30	10.6	3	1.1	2	0.7	31	11.0	1 A
Leads II and III	14	5.0	10	3.5	1	0.4			3	1.1	
Leads I, II and III											
Biphasic T waves											
Lead I	11	3.9	10	3.5					1	0.4	
Leads I and II	6	2.1	4	1.4	1	0.4			1	0.4	
Leads I, II and III	4	1.4	2	0.7	1	0.4			1	0.4	
Conduction defects											
Complete bundle branch block	4	1.4	4	1.4							
Incomplete bundle branch block	22	7.8	6	2.1							
Delayed a-v conduction											
Complete heart block	1	0.4	1	0.4							
Disturbances of rhythm											
Auricular fibrillation	8	2.8	3	1.1							1 A
Auricular flutter											
Nodal tachycardia											
Miscellaneous											
Lengthened Q wave in lead III	65	23.0	21	7.4			1	0.4			1 A
Normal	58	20.6									

A: T wave negativity in leads II and III, auricular fibrillation, lengthened Q wave lead III.

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Table III

COMPARATIVE INCIDENCE OF THE ELECTROCARDIOGRAPHIC FINDINGS IN 915 PATIENTS (45.8 PER CENT) WITH THE ANGINAL SYNDROME AND HYPERTENSION. PERCENTAGE BASED ON TOTAL GROUP OF 2000 CASES

Electrocardiographic findings	Total findings		One finding present		Two findings present								More than two findings
					Incomplete bundle branch block		Auricular fibrillation		Auricular flutter		Lengthened Q wave Lead III		
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	
T wave negativity													
Lead I	188	20.5	161	17.6	12	1.3	4	0.4	2	0.2	10	1.1	1 B
Leads I and II	96	10.5	71	7.8	5	0.5	7	0.8	1	0.1	12	1.3	
Leads II and III	25	2.7	20	2.2	1	0.1					4	0.4	
Leads I, II and III	24	2.6	20	2.2	3	0.3					1	0.1	
Biphasic T waves													
Lead I	88	9.6	74	8.1	7	0.8					7	0.8	
Leads I and II	23	2.5	19	2.1							3	0.3	
Leads I, II and III	19	2.1	18	2.0	1	0.1	1	0.1					
Conduction defects													
Complete bundle branch block	23	2.5	23	2.5									
Incomplete bundle branch block	50	5.5	18	2.0			3	0.3	1	0.1			1 B
Delayed a-v conduction	1	0.1	1	0.1									
Complete heart block													
Disturbances of rhythm													
Auricular fibrillation	28	3.1	12	1.3					2	0.2			1 B
Auricular flutter	6	0.7											
Nodal tachycardia	1	0.1	1	0.1									
Miscellaneous													
Lengthened Q wave in Lead III	81	8.9	44	4.8									
Normal	348	38.0											

B: T wave negativity in lead I, incomplete bundle branch block, auricular fibrillation

Table IV

COMPARATIVE INCIDENCE OF THE ELECTROCARDIOGRAPHIC FINDINGS IN 803 PATIENTS (40.1 PER CENT) WITH THE ANGINAL SYNDROME UNASSOCIATED WITH CARDIAC INFARCTION OR HYPERTENSION. PERCENTAGE BASED ON TOTAL GROUP OF 2000 CASES

Electrocardiographic findings	Total findings		One finding present		Two findings present								More than two findings	
					Incomplete bundle branch block		Complete heart block		Auricular fibrillation		Auricular flutter			Lengthened Q wave Lead III
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
T wave negativity														
Lead I	123	15.3	101	12.6	11	1.4	1	0.1	1	0.1	1	0.1	8	1.0
Leads I and II	37	4.6	28	3.2	6	0.7			2	0.2			3	0.4
Leads II and III	95	11.8	69	8.6	5	0.6			2	0.2			20	2.5
Leads I, II and III	29	3.6	20	2.5	4	0.5			2	0.2			3	0.4
Biphasic T waves														
Lead I	30	3.7	20	2.5	5	0.6			1	0.1			4	0.5
Leads I and II	11	1.4	10	1.2	1	0.1								
Leads I, II and III	8	1.0	5	0.6	2	0.2							1	0.1
Conduction defects														
Complete bundle branch block	29	3.6	29	3.6										
Incomplete bundle branch block	42	5.2	8	1.0					1	0.1				1 C
Delayed a-v conduction	2	0.2	2	0.2										
Complete heart block	1	0.1												
Disturbances of rhythm														
Auricular fibrillation	20	2.5	12	1.5										1 C
Auricular flutter	1	0.1												
Nodal tachycardia	1	0.1	1	0.1										
Miscellaneous														
Lengthened Q wave in lead III	82	10.2	43	5.4										
Normal	370	46.1												

C: T wave negativity in leads II and III, incomplete bundle branch block, auricular fibrillation.

Normal Electrocardiograms

I will first review the occurrence of normal electrocardiograms, as I believe that the proper appraisal of negative evidence in these cases is more important than the interpretation of obvious abnormalities. In my determination of what constitutes a normal electrocardiogram, I have disregarded the minor and variable alterations that may occur in normal hearts, such as ventricular preponderance, axis deviation, premature contractions, and variations in the contour of the P waves. I have also disregarded the notching and slurring of the QRS complexes in isolated leads, records that do not fulfill the requirements of bundle branch block.

Based on these criteria, the electrocardiograms in 34 per cent of 2,000 cases were normal. The lowest incidence of normal tracings was seen in fifty-eight (20.5 per cent) of the 282 cases of healed cardiac infarction of Group 1; the incidence was 348 cases (38.0 per cent) of the 915 cases of hypertension in Group 2, and the highest incidence, 370 cases (46.0 per cent) of the 803 uncomplicated cases of Group 3. Thus, although the electrocardiogram reveals significant abnormalities in the majority (66 per cent) of the cases, a normal tracing must never be the sole basis for excluding the existence of coronary disease.

T Wave Negativity

When T wave negativity occurs in Lead I, the statistical data in this study predominantly favor the existence of a healed infarct involving the anterior surface of the left ventricle, or the cardiac hypertrophy consequent to hypertension. The findings were seventy cases (24.8 per cent) in Group 1, 188 cases (20.5 per cent) in Group 2, and 123 cases (15.3 per cent) in Group 3. However, when T wave negativity occurs in Leads I and II, the chances predominantly favor the existence of cardiac hypertrophy consequent to hypertension. There were nineteen cases (6.7 per cent) in Group 1, ninety-six cases (10.5 per cent) in Group 2, and thirty-seven cases (4.6 per cent) in Group 3.

In cases of T wave negativity in Leads II and III the ratios become reversed. Chance predominantly favors the existence of a healed infarct involving the posterior basal portion of the left ventricle, and strongly militates against the effects of hypertension. The findings with these

changes revealed an incidence of sixty-five cases (23.0 per cent) in Group 1, twenty-five cases (2.7 per cent) in Group 2, and ninety-five cases (11.8 per cent) in Group 3.

When T wave negativity occurs in all leads, chance predominantly favors the existence of healed infarction. There were fourteen cases (5.0 per cent) in Group 1, twenty-four cases (2.6 per cent) in Group 2, and twenty-nine cases (3.6 per cent) in Group 3.

Diphasic T Waves

Diphasic T waves are transitions between positive and negative waves, and represent either the stage before which negativity occurs or the transitional stage of recovery following negativity. Thus, the importance of their proper interpretation becomes apparent. I have excluded diphasic T waves in Leads II and III, as they are very prone to be transitory; at times they occur in normal hearts, are evidences of the waning effects of administration of digitalis, and their evaluation is uncertain. The incidence of diphasic T waves was distinctly less than the negative T waves, and their relative incidence in the various clinical groups differed somewhat from the others.

Diphasic T waves in Lead I occurred in eleven cases (3.9 per cent) in Group 1, in eighty-eight cases (9.6 per cent) in Group 2, and in thirty cases (3.7 per cent) in Group 3. When occurring in Leads I and II it was found that six cases (2.1 per cent) were recorded in Group 1, twenty-three cases (2.5 per cent) in Group 2, and eleven cases (1.4 per cent) in group 3.

The occurrence of diphasic T waves in all leads were distributed in the following manner: four cases (1.4 per cent) in Group 1, nineteen cases (2.1 per cent) in Group 2, and eight cases (0.1 per cent) in Group 3.

Conduction Defects

Electrocardiograms displaying complete bundle branch block are most striking abnormalities. The QRS interval is prolonged, usually ranging between 0.12 and 0.18 seconds, and results from retardation of the spread of the excitation through the interventricular septum. Thus, the QRS interval is influenced by the thickness of the septum, which is often markedly increased in greatly hypertrophied hearts. The amplitude of the QRS complexes is usually high, and their

contour is deformed by notching and splintering which appears to result chiefly from lack of balance. The T wave is exaggerated, and its direction is opposite to that of the main deflection of the QRS group.

The greatest incidence of complete bundle branch block occurred in Group 3, in which there were twenty-nine cases (3.6 per cent). There were twenty-three cases (2.5 per cent) in Group 2, and only four cases (1.4 per cent) in Group 1. Thus, the occurrence of complete bundle branch block in cases of coronary sclerosis with the anginal syndrome in a ratio of 3:1 favors the existence of uncomplicated coronary sclerosis.

The electrocardiograms of incomplete bundle branch block comprise those displaying abnormalities transitional between normal complexes and those of complete bundle branch block. The amplitude of the QRS complexes rarely attains the height of those seen in complete bundle branch block. The QRS interval rarely exceeds 0.12 or 0.14 seconds, and the T waves do not bear a constant directional relationship to the QRS complexes.

The incidence of incomplete bundle branch block in this study does not parallel that of complete bundle branch block. The greatest incidence occurred in Group 1, in which there were twenty-two cases (7.8 per cent). There were fifty cases (5.4 per cent) in Group 2, and forty-two cases (5.2 per cent) in Group 3.

Delayed A-V conduction beyond 0.22 second occurred in only three cases of the entire group. There was one case (0.1 per cent) in Group 2, and two cases (0.2 per cent) in Group 3. We only look on this finding with significance when it persists after the subcutaneous administration of 1/100 grain (0.0006 gm.) of atropine sulphate. The delay in conduction disappearing after the administration of atropine is considered to be the result of vagal augmentation.

Complete heart block occurred rarely, only two cases being recorded. There was one case (0.4 per cent) in Group 1 and one (0.1 per cent) in Group 3.

Disturbances of Rhythm

It is well known that both auricular fibrillation and flutter may occur in any form of cardiopathy, yet experience has shown that they occur predominantly in mitral stenosis, hyperthyroidism and in cases of hypertension. Their oc-

currence in coronary disease is not outstanding.

Auricular fibrillation is characterized in the electrocardiogram by the absence of P waves, by total arrhythmia of the ventricular complexes, by a variation in the height of the R wave and often by the registration of the rapidly undulating fibrillary waves denoted as F. The absence of P waves is due to the fact that the auricles do not contract dynamically, but their walls are the seat of extremely rapid fibrillary activity. The irregularity of the ventricular components occurs owing to the fact that the discharge of auricular impulses is so rapid and incoördinate that only certain ones are transmitted through the A-V bundle.

Auricular fibrillation occurred with greatest frequency in Group 2, in twenty-eight cases (3.1 per cent). There were eight cases (2.8 per cent) in Group 1, and twenty cases (2.5 per cent) in Group 3.

The electrocardiogram of auricular flutter is striking. The most characteristic feature is the rapidity of the auricular waves, the P wave displaying a constant movement which results in a serrated graph. The individual P waves usually have a very angular appearance. In flutter the auricles contract very rapidly (200 each minute or more), so that impulse discharge occurs at a rate greater than the A-V bundle can transmit, and the ventricle responds to every second, third or fourth auricular impulse.

Auricular flutter and fibrillation are frequently alternating disorders of the same patient. There were six cases (0.7 per cent) of auricular flutter in Group 2 and only one case (0.1 per cent) in Group 3.

Nodal tachycardia, an ectopic rhythm originating in the auriculo-ventricular node, occurred only twice, in one case (0.1 per cent) in Group 2 and in one case (0.1 per cent) in Group 3.

Lengthened Q Wave in Lead III

During the last few years, considerable attention has been accorded to the lengthened Q wave in Lead III. Certain criteria for the consideration of this abnormality have been demanded, namely, electrocardiograms of left axis deviation, or normal axis deviation; the excursion of the Q wave in Lead III must exceed the greatest excursion of the QRS complex in any lead by 25 per cent; records with notching deformity of the QRS complex must be disregarded, and the

Q wave must be succeeded by a definite upward deflection (R) and no S wave.

When these criteria are strictly adhered to, one is impressed with the rare occurrence of this finding in what appears to be a normal heart. It occurs predominantly (90 per cent) in diseases that exert their influence on the left ventricle, such as hypertension and coronary sclerosis. The lengthened Q wave in Lead III is a common finding in coronary thrombosis when the infarct is situated in the basal posterior surface of the left ventricle. Its incidence in Group 1 verifies the foregoing statement; there were sixty-five cases (23.0 per cent) in Group 1, in contrast to eighty-one cases (8.9 per cent) in Group 2, and eighty-two cases (10.2 per cent) in Group 3.

Summary

The value and importance of the electrocardiograph in clinical medicine have been apparent for more than two decades, and the application of this diagnostic adjunct in cases in which the clinical history cannot be relied on is an additional weapon in the identification of questionable cases.

Let it be presumed for the moment that the sole basis for the diagnosis of coronary disease was vested in the electrocardiogram, and that we were willing to accept the diagnosis of cardiac disease as revealed by its inscription in order to appraise its value as a single diagnostic method. Let it further be presumed that the various

graphic abnormalities which my experience has taught me to consider as being significant, and which I have discussed, are, in truth significant. The analysis of the data in this study would at once indict 1,224 (60.1 per cent) of 2,000 patients.

The cases comprising Group 3 (803), that is, uncomplicated coronary sclerosis, are those in which physical examination may fail to reveal conclusive findings on which to make the diagnosis, and in which the diagnosis may rest wholly on the clinical history. This is true in about 25 per cent of the cases. Here the electrocardiogram immediately deletes 433 cases (53.9 per cent). The cases in Group 1 and Group 2 are largely eliminated on physical findings alone.

The examiner, of course, always has many other methods of detection of cardiac disease at his command, and the information available through careful physical examination is, without doubt, the most important. Abnormalities of rhythm, the presence of murmurs, alterations in cardiac tones, increase in size of the heart, as verified by the teleoroentgenogram, elevation or other abnormalities of blood pressure, and so forth, offer a line of defense difficult to penetrate when the examination is carefully conducted and the findings are judiciously appraised.

The electrocardiogram is a diagnostic adjunct and, when properly interpreted, becomes a method of precision that is indispensable in the complete scheme of cardiac diagnosis.

THE BORDERLINE BETWEEN NEUROPSYCHIATRY AND GENERAL MEDICINE*

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THIS is a generous subject and were it not for its far reaching importance to the profession I should be loath to discuss it, necessarily, so briefly. One might wish that there really were a borderline between general medicine and neuropsychiatry, as the title implies with its suggestion of distinct cleavage in symptomatology. Experience teaches us, however, that the ap-

proach through psychiatric lines is rather through a broad neutral zone supplying one of the most fruitful fields of medical practice, to the clinical possibilities of which the profession seems to stand in singular disregard.

The reasons are several. The young doctor, fresh from school, seems poorly trained for the appreciation of such abstract phenomena as personality changes. This is in part due to his youth and lack of experience, but also largely because his course is one of studied objectivity

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from beginning to end. Concrete sciences are taught in the greatest detail, but abstract considerations, such as psychology and sociology, are suggested only as helpful electives in the premedical course. In his clinical years lack of space in the teaching hospitals or a lack of interest on the part of his teachers, who are interested particularly in the objective side of medicine, militate against an intimate acquaintance with the so-called "functional states," and his training in this huge field of medical practice is only accomplished through a receptive appreciation within himself, combined with an active and extensive practice. Unfortunately many physicians also are not so constituted as to ever incorporate an understanding of this type of practice into their medical consciousness, and an obstinate objectivity persists through life, with the usual disfavor of the orthodox toward the heretic.

The poor patient, as a result, is oftentimes the unfortunate victim. The psychiatrist who understands him, rarely sees the true borderline patient because the latter is the last to admit a psychopathic approach and shuns his advice. The uncertainty of his condition, his apprehension and his failure to get well, lead him from his family doctor frequently to consult a round of specialists, who only too often, by therapeutic shortcuts, tend to relieve him by surgical procedure rather than by the more circuitous psychological approach. He turns to the unorthodox practitioner and healer, who, to the disgrace of the profession, oftentimes accomplishes more than the trained physician. If all his efforts at relief meet with failure he ultimately accepts his invalidism or gives up, despairing of cure. I have witnessed so much needless surgery, and lack of accomplishment, in the treatment of these cases, that I do not wonder at the apparent success of some of the cults. Certainly this lack of interest and understanding does not redound to the ultimate good of the profession, and is, I believe, one of the greatest reproaches to medical skill and professional ideals.

One need not be a skilled psychotherapist nor does one require thorough psychiatric training to treat these unfortunates, but there must be an understanding of human nature, a benevolent sympathy and that sense of proportion so commonly known as "horse sense." With such attributes, so often a part of the successful general practitioner, more can frequently be accomplished

than with mountains of specialistic zeal. It is not with the more outspoken psychoneurotic conditions that confusion prevails. The major hysterical states and anxiety neuroses are easily identified. The difficulty seems to lie chiefly in that large group of so-called "neurasthenics," with the exhibition of abnormal fatigability and irritability, emotionalism, and the milder anxieties associated with functional symptoms projected into the somatic sphere, frequently so difficult to distinguish from true organic disease. Patients who are neurotic are as prone to physical illness as those who are not, and it should be borne in mind that every normal person is in part neurotic, and every neurotic is much normal, and each element may supply its integral part in the clinical ensemble. It is astonishing how recovery from an intercurrent illness changes an underlying neurosis so little. That there is a temporary remission is not to be wondered at in view of the focusing of the patient's mind on the determinative illness, and the good wishes and attentions of his friends and attendants tend temporarily to foster improvement. The greater misfortune lies in those instances where a condition is assumed to be a neurosis to the neglect of an obscure incipient tuberculosis, brain tumor, general paresis or malignancy. The crux of diagnostic evaluation lies in these confusing situations.

It is our tendency to make an indirect diagnosis of a neurosis and a functional state only after the most extensive and expensive diagnostic procedures, and we do not heed sufficiently the symptomatic ensemble of the neurotic, which in itself is so characteristic. In fact, so much is this true that a direct diagnosis of a functional condition can, as a rule, be made just as exactly as the diagnosis of more specific organic disease, such as peptic ulcer or bronchiectasis. A direct diagnosis of a neurosis is not justifiable unless a positive cause for the diagnosis can be established. Macy and Allen recently reported the accuracy of diagnosis of chronic nervous exhaustion on 235 patients. They found this to be about 95 per cent, a gratifying accuracy to be sure. These patients were all studied exhaustively over a period of several years. Of the fourteen patients in whom the diagnosis was in error, three had tuberculosis, three chronic encephalitis and two hyperthyroidism—the usual sources of diagnostic conflict.

The general symptoms in the neurotic patient are characterized by their variability and lack of definition. The patient's suggestibility is striking. His recital is filled with detail, lacking in the forthrightness of organic disease. Due to the lack of sympathy among his listeners to his oft repeated tale of complaints he soon learns to augment his story by the use of superlatives, and the minor initial expression is changed to a woe-ful tale to impress his audience the more. Charcot describes him as "the man with the little piece of paper," and I recall this every time a neurotic consults me with his carefully written, serial list of symptoms, lest he overlook the minutest points. Certain symptoms often dominate the picture, as irritability and fatigability, gas belching, air hunger, vague, fugitive, so-called "neuralgic" pains, vertical and occipital cephalgia, palpitation and paresthesias. One can conceive of few organic ailments which would fulfill all these symptomatic requirements. The problem should arouse a consideration, possibly, of hyper- or hypothyroidism, tuberculosis, organic heart disease, hypertension, brain injury or other organic nervous disease. Their elimination as etiologic agents should not make one hesitate to make a diagnosis of a functional disorder, since it is, after all, the most common disorder of the consulting room. When the symptoms are projected into some somatic zones, to the exclusion of others, as in the patient who fears heart disease, tuberculosis or cancer, the consultant is oftentimes led astray to temporize and hesitate because of his uncertainty of diagnosis, to the disadvantage of both the consultant and the patient. The consultant, by his vacillation between the diagnosis of organic and functional disease, is in the position of the ass who couldn't decide between the two bales of hay—and the patient's manner soon reflects the uncertainty of the physician.

Hence, one should first carefully note the history, with its elaborations; note the manner of its presentation, and the demeanor of the patient. Pediatricians tell me that even in children who are barely able to talk, they can, frequently, by the child's mannerisms, detect the propensity toward the neuroses and functional states. A general and not too cursory an examination should be made of each patient, and conclusive diagnostic tests resorted to, with suitable laboratory aids, but once the absence of organic dis-

ease is established with reasonable certainty a forceful and unequivocal statement should be made and the treatment outlined. The first prerequisite of the latter is a specific statement as to the nature of the dysfunction, supplemented by a thorough explanation of its apparent causation; and, lastly, medicinal, hygienic and social advice. A broad foundation of understanding must first be established in the mind of the patient, to be followed by a therapeutic approach to meet the individual needs.

One of the most confusing situations is the question of hyperthyroidism. Obviously, it is the borderline case which offers the difficulty and not those with the more frank hyperthyroid symptoms. As a corollary it may be stated that it is in these instances that surgical haste is least essential and ample time for observation is offered. The criterion for its diagnosis is oftentimes an acceptance of a moderate elevation of the metabolic rate, but its accuracy and a repetition of the test to insure that it is truly basal is not insisted upon. Dr. Lahey aptly said that an essential difference is that the neurotic doubts his ability to carry on effort but can accomplish things, whereas the hyperthyroid patient is confident of his ability in physical effort but lacks the strength. The pessimism of the one and the optimism of the other are antithetical. The neurotic has a history of long duration and of indeterminate onset, whereas the hyperthyroid patient usually can attribute the origin of his illness to a certain event. The good appetite of the hyperthyroid patient, oftentimes associated with a loss of weight, is characteristic, and in marked contradistinction to the capricious and uncertain digestion of the neurotic. The neurasthenic patient usually feels better during periods when his attention is diverted, though it may be recreative physical exertion, but effort of any kind is usually accompanied by shortness of breath and early exhaustion in the hyperthyroid. Though the objective symptoms of hyperthyroidism may be few and simulate the findings in a neurasthenic, they are found to be more persistent in spite of rest, which usually favors the neurasthenic, and are more persistent than the frequent fluctuations of the nervous patient.

Tuberculosis, particularly pulmonary tuberculosis, is frequently a source of diagnostic error. It is not that the diagnosis of tuberculosis is made too often in the neurasthenic, but rather

that the patient who has tuberculosis, particularly of the milder type, is thought to be neurotic rather than the victim of organic disease. The family and personal history of the tuberculous patient, the history of contact, the symptoms suggesting a pulmonary affection, and particularly and conclusively the value of the x-ray, should aid in a rapid elucidation.

One of the reasons for the failure to identify organic nervous disease in patients is the lack of knowledge on the part of the physician in not only being unable to interpret the physical evidences of organic disease, but, what is more to the point, also unable to make a thorough examination of the nervous system. The Continental belief that every general practitioner and certainly every internist should have a thorough understanding of neurology seems lacking in this country. The broad principles of neurologic examination and interpretation should be known, so as to avoid pitfalls wherein chronic encephalitis, general paresis or multiple sclerosis, to mention a few glaring examples, may not be confused with simple functional complaints. Time does not permit of further elucidation, but most confusing evidences and opinions are heard in medico-legal situations involving the nervous mechanism. One need not lean awkwardly toward the view of such ardent organists as Straus and Savitsky, who in their recent article in the *Archives of Neurology and Psychiatry*, seem to conclude that all symptoms complained of by persons with head injury should be recognized as indicating definite anatomical pathology, to the virtual exclusion of psychogenic factors, but the consultant must be in awareness of such possibilities. Their article, at least, encompasses the methods of examination which would minimize mistakes; yet, where psychogenic characteristics, motivated by cupidity, resentment and greed, can so easily prevail, too much credence cannot be placed on the complaint of subjective symptoms not borne out by objective data. The gullibility of the plaintiff's physician and the obstinacy of the defendant's witnesses (if I may be pardoned for using the possessive term) afford a stalemate so commonly, that such divergent possibilities must be a source of wonder, if not amusement, to the laity. If one is inclined to accept the teaching of Straus and Savitsky that organic injury is the common effect of head injury, he should read an article on "The Post-traumatic Neu-

roses" (a term which Straus and Savitsky wish to abandon) by Hall and Mackay (*Jour. Am. Med. Assn.*, 102:510), which embodies a worthy rebuttal.

Disturbances of the endocrine system, aside from hyperthyroidism, supply a great field for speculation in functional etiology, one might say in inverse proportion to our actual knowledge of individual and multiple endocrine gland disease. One must not be led astray by theory and animal experimentation and try to apply it too freely to practice. The lack of application need not be a deterrent to further clinical study, but, aside from Addison's disease, thyroid disease, disturbances of insulin mechanism and the frank and outspoken pituitary disorders, promise rather than acceptance should be the rule.

In no field of medicine has there been so much uncertainty as in the study of functional gastrointestinal disease. The misinterpretation of heart symptoms may be similarly discussed, but the heart is not likely to be the subject of surgical attack as is the case in digestive disorders. The borderline gallbladder and appendix will probably always remain as the uncertain elements, but the wholesale removal of these organs because of a failure to analyze the history and symptoms has been a blot on our escutcheon, to which we have all contributed at times, but fortunately with varying intensity of belief and purpose. To further complicate the issue we always have the support of the pathologist for the surgical procedure, and the physician considers himself justified. A careful analysis of the pathological report, however, will often disclose minor evidences of structural changes, which, if they occurred on the pleura, the spleen or the kidney, would be dismissed as of no clinical importance. To argue that the patient's symptoms will be permanently allayed by the elimination of such uncertain evidence of disease is only too often fallacious.

This brings up the question of the patient who has had numerous operations. We frequently see patients who have been operated on from three to twelve times for various reasons. This routine of surgery is usually precipitated by a removal of the gallbladder or the appendix, or both, with subsequent operations performed on the uterus or other abdominal organs, to be followed later on by a series of efforts to relieve alleged adhesions and partial obstruction. The

latter diagnosis suggests a remark made by Dr. Haggard at a meeting in Minneapolis a few years ago, in which he said, "Adhesions is the refuge of the diagnostically destitute." This should ever be borne in mind in patients who have had multiple operations without apparent relief. I have heard this discussed by an eminent psychiatrist, who stated that the reduplication of symptoms in the patient may be a "functional overflow," due to the impression on the patient's psyche, obtained as a result of the symptoms developing in the convalescence from the first operation. At any rate, it is striking how the symptoms of operative convalescence are repeated in these patients and afford a reason for further surgical operation. These symptoms, peculiarly enough, frequently resemble those due to intestinal obstruction. Convalescent patients have distention, vomiting, constipation, pain in the abdomen and frequently retention of urine, which condition the hypochondriac and the neurotic patient to the recurrence of these symptoms from time to time. The rather dramatic subjective complaints may be very confusing, and one may be pardoned for making a diagnosis of intestinal obstruction, although a careful analysis and reasonable and thoughtful delay will save many of these patients from frequent operations.

One witnesses the same repetition of symptoms, conditioned by the initial insult, oftentimes in angina pectoris and coronary occlusion, where the patients have repeated attacks of pain again and again, entirely too frequently to be on an organic basis, and probably conditioned only by

the underlying organic disease and the psychic trauma resulting therefrom.

Conclusions

1. A plea is made for a more intensive appreciation of the value of psychology and kindred subjects in the treatment of diseases. The frequency of functional complaints is overlooked, whereas it occupies the major part of one's practice. A proper training, experience, and a good sense of proportion, will avail the most in an appreciation of these states.

2. The situation may be viewed from several standpoints: (1) Patients who are victims of purely functional disease; (2) those who have an underlying neurotic background but in whom there is an intervention of organic disease; (3) those patients in whom subsequent observation reveals an error in diagnosis. These errors in diagnosis involve chiefly patients who have organic disease and are misinterpreted as having a purely functional disorder, and those who have only a functional disorder but in whom the diagnosis of organic disease is made and treatment is instituted for its correction without due regard for the psychogenic background.

3. The greatest source of conflict lies in the consideration of hyperthyroidism and other endocrine disorders, organic nervous disease, including post-traumatic phenomena, tuberculosis, cardiovascular possibilities, and gastrointestinal disturbance. These conditions do not include all sources of confusion, but the most conspicuous only.

BLOOD TRANSFUSION IN THE TREATMENT OF SEPSIS*

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SINCE blood first flowed in savage warfare mankind has been mystified and puzzled by the fluid which congeals upon its escape from the blood vessels. To this day certain primitive tribes hold that the courage and other virtues of a fallen enemy may be transferred by drinking his blood. The beginnings of the Renaissance

saw more intelligent attempts to promote healing by the use of blood, and in 1492 it is recorded that three small boys were unsuccessfully used as donors in an effort to revive the dying Pope Innocent VIII. We are not certain whether this blood was given by mouth or by injection. Feinblatt² considers that the first logical reason for the intravascular injection of fresh blood appeared when Harvey announced his discovery of

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the circulation in 1628. Later Richard Lower, also an Englishman, was successful in doing transfusions between two dogs. This was in 1665, and, two years later, Jean Baptiste Denys, the physician to the French Court, succeeded in using the blood of a sheep to replace that lost by a man subjected to over-effective therapeutic venesection. In succeeding years the practice became more and more frequent with occasionally a brilliant recovery but more often an indifferent or even fatal ending. Coagulation of the blood to be transfused offered one formidable obstacle to success which Bischoff in 1835 tried to overcome with defibrinated blood. This procedure left the blood saturated with fibrin ferment and added the danger of intravascular clotting to those reactions which are now recognized as arising from the use of incompatible blood.

It was not until 1900 when Landsteiner^{7,8} announced his discovery of iso-hemagglutinins and blood groups that a rational basis for the selection of suitable donors for any given case appeared. Landsteiner's three groups were later expanded to four and systematic measures for their identification devised by Jansky,⁴ 1907, and Moss,¹¹ 1910. Unfortunately the two systems show a reversal of groups one and four, which sometimes causes confusion. Word has recently come from Vienna¹⁵ that three additional blood groups have been discovered, groups M, N and MN. It is not certain that this discovery will affect the practice of blood transfusion as iso-hemagglutinins seem to be lacking and its chief interest lies in the field of heredity and medico-legal studies of parentage.

Once the biological standards of safety were established, technical methods of transfer were not long awaited. Crile,¹ in 1907, devised a feasible method of artery to vein connection which, however, left in doubt the volume of blood transferred. In 1913 Kimpton and Brown⁵ brought forth their paraffin coated tubes with cannula necks. Shortly thereafter Lewisohn⁹ utilized a weak solution of sodium citrate to precipitate the solution calcium of the blood, which prevented coagulation and made transfusion a leisurely procedure to be carried out with the common graduated intravenous funnel. In the same year, 1915, Unger¹⁴ employed his two-syringe method, using a two-way cock. Since that time literally scores of methods have been devised each of which has its circle of advocates. All, however,

have features which may be criticized and the perfect method is still to be developed.

The author has acquired a preference for transfusions done with Vincent's modification of the paraffin coated Kimpton-Brown tubes and unless otherwise stated this method was employed in the cases to be discussed shortly. The method is simple, reliable and satisfactory and does not flood the blood stream with chemicals whose effect is at best debatable. This method has the one drawback that it usually requires final ligation of the veins used in both donor and recipient. This is a small matter in the case of all except professional donors. At such times it is possible to withdraw blood through a special needle so that the vein need not be sacrificed. This method involves less whipping and churning of the blood than any of the mechanized whole blood methods, which perhaps is in some measure responsible for its relative freedom from the more severe and unpleasant types of reaction.

Turning to the uses of transfusion in therapy one naturally thinks first of anemia. Here, all kinds and conditions may be relieved and, in the anemia following hemorrhage, transfusion is, of course, the sovereign remedy. Blood transfusion is sometimes of value in the treatment of infections where drugs, serums and the patient's own waning powers of resistance are inadequate. It seems to be more beneficial in certain types of septic infections and an effort will be made to point out these groups. First in line are the exanthemata and the contagious diseases of childhood. As might be expected from the fact that the average adult has acquired an immunity to these infections and possesses antibodies in his blood the results are, on the whole, good. Landon⁶ warns against transfusion in diphtheria complicated by laryngeal involvement or myocarditis. This is largely because of circulatory mechanics where an overload might be more than the damaged myocardium could handle. He finds it of value in scarlet fever, measles and pertussis and their complications. He also advises its use as a general tonic in protracted cases with anemia and malnutrition. The average mild, self-limited case in this group, of course, needs no recourse to blood transfusion.

In certain other acute infections, notably pneumonia and typhoid, the reports in the literature are frequently conflicting, favorable reports being counterbalanced by more gloomy ones. Pneu-

monia certainly of type one and perhaps others would probably have a more favorable reaction from the correct antiserum. Typhoid, if complicated by hemorrhage, should benefit by transfusion. Otherwise only a general tonic effect is probable.

It is in the suppuration due to the common pyogenic cocci and in the septic complications of primary non-suppurative diseases that the greatest field of usefulness for blood transfusion seems to exist. Some writers become quite eloquent about the excellent results secured, while practically all admit that a certain minimal number of such patients who have not benefited by other forms of therapy are cured. In these cases, of course, transfusion aids but does not replace necessary surgical drainage. Operative measures should first be carried out in a thorough going fashion and then the supportive transfusion given. Occasionally this sequence may be reversed and the transfusion given first. If suppuration is merely threatened but not actually present surgical measures may possibly be forestalled.

Numerous writers recognize the special benefits of transfusion in individuals with pyogenic infections and septic sequelæ. Lillie¹⁰ has secured excellent results in the complications of middle ear infection. His use of a combination of transfusion with the injection of bactericidal dyes in some cases however leaves us a bit uncertain of where the credit belongs. Hume³ concludes that "the treatment of generalized infections is on the whole disappointing" but elsewhere rather paradoxically states of transfusion that he "uses it regularly and sometimes repeatedly" a viewpoint not without significance.

Finally come the chronic diseases such as tuberculosis and lues. From transfusion they may derive some slight tonic benefit but certainly nothing in the way of curative action.

I have very largely expended my personal efforts in the administration of transfusions in patients with suppurative complications of diseases which are primarily not suppurative and infections due to the pyogenic cocci. Of seventy-five patients who in the past eight years were given blood transfusions for septic conditions, seventeen, or 22.6 per cent, either died or received no benefit; forty-nine, or 65.3 per cent, were benefited and their recoveries hastened while in nine, or 12 per cent, transfusion seemed to have life-

saving value. The cases in this series include those of otitic origin such as sinus thrombosis, mastoiditis and meningitis; also post-pneumonic empyema, puerperal sepsis, septic arthritis, osteomyelitis and septicemia from dental sepsis, and septic bacteremia. Many of these cases had already been treated by other means with little or no benefit and were decidedly poor risks, a few being almost moribund. The following cases are illustrative of the types encountered and the difficulties met.

Case 1.—K. L., a boy of two years and two months, was admitted to hospital March 3, 1926, having had a double otitis media and cervical adenitis of six weeks' duration, and was suffering from pain and swelling back of the left ear. Mastoid operation was performed April 5. The fever and signs of sepsis continued unabated until April 11th, the temperature having touched 105°, pulse 150-160. He was given a transfusion of 300 c.c. of whole blood. He showed slight improvement the following day and progressive recuperation until his temperature reached normal on April 16, with pulse of about 120. He continued in satisfactory condition without complete recovery until April 30, when the right mastoid became painful and swelled and his temperature rose. The right mastoid was opened on May 4, and he proceeded to an uneventful recovery, being discharged from the hospital May 11.

Case 2.—C. M., a schoolboy of eight years, was admitted to the hospital on May 15, 1929, for pain and swelling back of the right ear, which had been draining for one month. He was having alternate chills and sweats with rapid temperature swings suggestive of sinus invasion. A perisinus abscess was evacuated May 18. He continued until May 20 to have the same septic fever and pulse of 110-120, when he was given 600 c.c. of whole blood. The red cells rose from 3,992,000 to 5,088,000 and the hemoglobin from 72 to 79 per cent. The pulse dropped to an average rate of 90-100 and the temperature swings narrowed until May 29 they became normal. There was a small flare-up on June 2 which was relieved by removing obstructive packing. There was a rapid healing of the mastoid wound and he was discharged well on June 10.

Case 3.—C. A., a male child of sixteen months, entered the hospital with a right otitis media. A paracentesis of the ear was done the following day, January 1, 1933. His condition became worse, involving the mastoid, which was operated upon January 3. Following this the temperature dropped to normal, where it remained until January 6. It again rose accompanied by increased postauricular drainage. Wide temperature swings with alternate chills and sweats appeared. There was also a cough and blood streaked sputum and x-ray showed an upper left broncho-pneumonia. This condition continued with progressive loss of weight and strength for eight days, when a blood transfusion of 300 c.c. was given. Within twenty-four hours the fever

BLOOD TRANSFUSION IN TREATMENT OF SEPSIS—BACON

dropped by crisis and the child made an uneventful recovery.

Case 4.—A. G., a school girl of six years, came to the hospital May 3, 1933, five weeks following measles, with a discharging right ear. She had a high fever and pulse rate and May 5 the mastoid was operated upon and the sinus uncovered but not opened. A 500 c.c. transfusion on May 6 improved both the color of the patient and the quality of the pulse, but did not alter its rate nor the temperature. May 13 a second 500 c.c. was given and for the three succeeding days both pulse rate and temperature were lower. May 19 streptococci were reported in the blood culture. May 26 a third 500 c.c. transfusion was given with seeming benefit to her general condition but no pronounced reaction in pulse nor temperature. A fourth transfusion June 6 initiated a period of lysis lasting ten days and the patient made a good recovery.

Case 5.—L. A., a female child of fifteen months, entered the hospital February 10, 1933, with a lobar pneumonia of the left upper lobe. She was severely ill for a month and on March 13 purulent fluid was aspirated. The fever ranged from 100-101, pulse rapid and feeble. March 16 a rib resection was done and thick yellow pus containing streptococci drained from the pleural cavity. March 19 300 c.c. of whole blood was transfused and the hemoglobin rose from 37 per cent to 67 per cent. In four days the temperature had become normal and in eleven she left the hospital seemingly well.

Case 6.—A. L., a married woman of thirty-eight, had a normal delivery April 7, 1927. April 8 she was pale and weak and her temperature rose to 101 and averaged that for some days. The lochia developed a foul odor and her hemoglobin dropped to 20 per cent. April 19 the patient seemed in a precarious condition and was given 900 c.c. of blood by transfusion. The hemoglobin rose to 44 per cent and she felt much improved. The temperature dropped from 103 to normal and the pulse from 120 to 90 in four days. She remained in the hospital for six more days and went home still anemic but without signs of infection.

Case 7.—M. B., a housewife of forty, was seized with fever and painful joints on September 8, 1931. She developed a toxic delirium and had a fever which at times reached 103. The left knee became swollen, red and acutely painful and transitory pains were felt in other joints. Cultures from the blood and left knee were repeatedly sterile. After the illness had continued without either mental or physical improvement for a month she was given 500 c.c. of whole blood on October 7. This was followed by a chill and a severe reaction lasting two days, during which time repeated intravenous infusions were given. The orthopedic consultant stated definitely at this time that the left knee was improved. On October 13 the mental condition was improved and on the seventeenth she seemed entirely clear. The temperature dropped by lysis and became normal October 19. She made a slow but steady improvement and left the hospital December 12.

Case 8.—A. W., a postal clerk of thirty-six, had a

tooth extracted February 26, 1932. The following day he had a chill and a profuse hemorrhage from the site of extraction. The ensuing week he had frequent chills and bleeding from the gums, nose, stomach, and bowels. He became worse and when first seen March 15th his hemoglobin was 18 per cent and he seemed moribund. A transfusion of 1300 c.c. raised the hemoglobin to 38 per cent. The pulse rate and fever continued high. March 20 the blood culture showed hemolytic streptococci. March 22, 600 c.c. of whole blood were given, followed in the next four days by improvement and a remission in the temperature and pulse rate. April 6, 600 c.c. of whole blood were given. He seemed much improved and April 8 the pulse and temperature were normal. A mild fever April 12 to 14 quickly subsided. April 16 the hemoglobin was 62 per cent. During the next two weeks seven abscesses containing from an ounce to four ounces of pus were evacuated from the deep muscles of the right shoulder, left pectoral region and the glutei and adductor muscles of both sides. He made an eventual good recovery.

The above eight cases were admittedly reviewed because of the definite benefit received. Many others did practically as well. In Case 7 there may be some doubt whether improvement was due to the transfusion or the reaction following. In all cases the degree of illness and toxicity was far more severe than the bald clinical outline reveals. Other patients derived no benefit or died; for example, the man whose mastoiditis progressed to sinus thrombosis and pulmonary embolism before transfusion could be done. Due to laboratory errors two patients were given incompatible blood. In each instance transfusion was stopped when about 100 c.c. of blood had been injected because of the typical symptoms of dyspnea, precordial pain and marked agitation. Both patients showed yellow skin, conjunctiva and secretions on the following day. One of these, a woman with puerperal sepsis, recovered despite the transfusion. The other, a boy with otitic complications, died probably from his meningitis. Transfusion benefited neither.

Of those patients who recovered, a certain few did so with a dramatic, crisis-like fall of temperature and sudden restoration to comparative health. But one explanation seems to fit these circumstances, namely that the new blood possessed some variety of preformed immunity to the existing infection, though no effort was made to supply immune donors. Other cases showed improvement only after days. Our knowledge of the chemical nature of immunity is so rudimentary that we do not know how to produce it

as needed except in a few specific instances. Smallpox and typhoid may be prevented through the immunity following vaccination. Diphtheria and sometimes tetanus and gas bacillus infection may be cured through immune horse serum, but again we know little of the chemistry or mechanism involved beyond the fact that the immune bodies seem to be closely associated with the globulin fraction of the blood serum. In certain of these transfusion cases one gains the impression that raw material for the manufacture of immunity has been supplied and that after it has been processed in the cellular chemical factory of the body, increased immunity appears. Okamoto^{12,13} has shown that the recipient's serum following transfusion contains increased agglutinins and opsonins against infection. In addition almost any illness may benefit from the filling of depleted blood vessels and the additional oxygen carried by the new hemoglobin.

Summary

Blood transfusion is frequently of great value in treatment of infections due to the pyogenic cocci acting either as primary invaders or producing suppurative complications in other diseases. Although we do not understand the mechanism of it, certain cases seem to react to transfusion by the formation of increased immunity.

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EUPHYDIGITAL NOT ACCEPTABLE FOR N.N.R.

The Council on Pharmacy and Chemistry reports that Euphydigital (Byk-Guldenwerke, Berlin, Germany; Byk, Inc., New York, American agents; Adolphe Hurst & Co., Inc., New York, General Distributors) is said to be a combination of Metaphyllin and digitalis. Each tablet is stated to contain 0.1 Gm. of Metaphyllin and 0.1 Gm. of powdered digitalis leaf ("150 frog doses"). Each suppository is said to contain 0.2 Gm. of Metaphyllin and 0.15 Gm. of powdered digitalis leaf ("225 frog doses"). Metaphyllin (formerly called Euphyllin) is said to be a combination of approximately 78 per cent of theophylline with ethylenediamine, having the advantage of being more soluble than theophylline. Advertising for Euphydigital received by a physician in April, 1932, states that "the action of digitalis can be considerably increased by the simultaneous administration of Metaphyllin." This is a remarkable statement in view of the fact that up to about 9 grains of digitalis daily is recommended in the form of Euphydigital. Among the great advantages claimed for Euphydigital are: "By reason of the vaso-dilatant action of Metaphyllin, particularly that on the coronary vessels,

Euphydigital may also be given in cases of heart decompensation with raised blood pressure for combating the insufficient symptoms, as the bloodpressure-decreasing characteristic of the Metaphyllin constituents forms a safeguard against any further rise in the blood pressure by means of the digitalis." It is well known that patients suffering with cardiac disease and nephritis often require both digitalis and one of the purines, such as theobromine or theophylline, and it is considered in the last degree irrational to use a mixture of digitalis with any other substance. There is no evidence that Metaphyllin possesses the capacity for causing marked coronary dilatation in cases in which it is imperatively needed; and it is misleading to state that digitalis constricts the coronaries, because there is no evidence that digitalis has such action, especially when used in the presence of coronary sclerosis. The Council declared Euphydigital unacceptable for New and Non-official Remedies because it is an irrational mixture of digitalis and a theophylline preparation marketed under an uninforming, proprietary name, with exaggerated and unwarranted claims for its therapeutic value. (*Jour. A. M. A.*, July 8, 1933, p. 124.)

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W. A. COVENTRY, M.D.
President, Minnesota State Medical Association
1935

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE, Saint Paul

Volume 18 JANUARY, 1935 Number 1

State Sickness Insurance

The new year will bring new problems to the leaders of our State Medical Association. Our past president, Dr. Savage, has energetically led our Association the past year and our president for 1935, Dr. Coventry, possesses the qualities of leadership and is conversant with State Association affairs through years of experience. No more important problem will be confronted this year than the sickness insurance bill to be presented to our State legislature.

Those who had the opportunity to hear Dr. Morris Fishbein deliver his admirable address last month before the Ramsey County Medical Society on the developments in Washington in Social Security matters must have realized that our national medical organization is doing all that is humanly possible to prevent social reformers from forcing the government to adopt radical medical legislation.

Those of our readers who read in our last issue the article concerning the Health Insurance Bill, the child of the American Association for Social Security, which is to be submitted to our State legislature, must realize that the people of Minnesota will be called upon to decide whether they wish to follow the lead of Germany, England and other European countries in the matter of compulsory health insurance.

Without going into the merits or demerits of the proposals which have had such widespread discussion suffice it to say that those of our profession who have given the subject much study and thought believe that compulsory sickness insurance leads to inferior medical service and is therefore a detriment to the public.

Apparently the question of the adoption of compulsory sickness insurance is to be decided by the several states instead of at Washington. The public gets what it wants. However, our legislators should be informed in no uncertain terms of the conviction of the physicians of the state that this insurance is not for the best interests of the people of the state.

Fifty Years After Trudeau

1885 - 1935

The late Longstreet Taylor* (the "Minnesota Trudeau") within eight years after the beginnings at Saranac Lake, New York, built his own private sanatorium for tuberculosis and began a very noteworthy and successful crusade. At the recent meeting of the Minnesota Public Health Association twenty-two sponsors were named. Thus, a very active group of self-sacrificing men and women have found pleasure and satisfaction in lending their talents and support to the up-building of a general massed opinion that has been of the greatest benefit to our administrative health officials.

The original emphasis upon tuberculosis and its prevention has yielded, as the work has been taken over by our health departments and sana-

*In 1943 Minnesota health workers should fittingly ceremonialize the half-century mark after the work of this great man. Others, like the late Dr. George Wattam of Warren, might also be honored.

torium boards, to an emphasis upon various other diseases and their prevention. Publication of a health magazine that is worthily crusading for logical guidance to better living and health conditions is indeed a praiseworthy accomplishment.

The recognized success of such public health movements against diseases like tuberculosis and diphtheria has encouraged many agencies and laymen to hope that like efforts toward the giant killers, such as cancer, pneumonia and cardiorenal disease, might well bring equally striking results. Health officials, statisticians and actuaries have, however, been prompt in predicting that the "Golden Age of Medicine" has witnessed the maximum of results from such massed movements; therefore, for the distressing degenerative and neoplastic perversions of the later decades of life, the "law of diminishing return," obtrudes itself to offset the value of general educational campaigns, and to magnify the importance and the position of the individual contact and relationship maintained between the patient and his doctor. It is likely for that reason that associations founded comparable to that which pioneered against tuberculosis and laid a secure foundation for discriminating general health propaganda, have not found much acclaim, popular or medical, in fields such as cancer or heart disease.

The pessimistic current trend in our periodical literature stresses what is termed our transition from "the Age of Enlightenment to that of Disillusionment." Wilson and the treaty at Versailles give the usual example, and the supposed victory for democracy is usually portrayed as the beginning of its world obsequies. Something of that sort may well come to us as we review certain of our health triumphs and as we witness the virtual control of typhoid and diphtheria and very promising results with tuberculosis. It may be implied that our main purpose is not within the field of political and economic security, but it must be obvious that some sort of a coherent and interdependent and stable society is necessary to make and to hold the ground already gained. It is most distressing to witness what is happening in Central Europe and how rapidly a crumbling economic structure reflects itself in the state of medical practice, the maintenance of hospitals and reasonable health standards. We see promptly how closely our work is tied up with standards of living and employment, the living wage and general security.

It follows, therefore, that those who direct our health activities should fully keep in mind how closely our ultimate position is tied up with a balanced effort that is within the capacity of society to sustain. The self sustinment of our state association through the universal sale of Christmas seals is one of the most laudable aspects of a national and state anti-tuberculosis campaign. The virtual recognition that other matters than health are of equal or greater importance is another extremely meritorious acknowledgment. Few doctors would hesitate to admit that priceless though health may be it stands subordinated to such essential matters as plain individual honesty or moral integrity, not to mention ultimate justice. It is for these reasons that we look with such favor upon the all-important character building organizations such as the 4-H Club, emphasizing, as it does, in addition to health, the head, the heart and the hands. All power, therefore, to these movements—and the Boy and Girl Scouts are closely allied—that lay not only a foundation for health but for citizenship. It has been wisely written that no political or economic Utopia, however conjured up, can ever rise appreciably above the character level of the people concerned.

E. L. T.

Cigarette Smoking

With the tremendous increase in cigarette smoking since the World War, some 116 billion cigarettes* having been consumed in this country in the year 1930, some of the more recent observations on the functional effects of smoking should be of interest.

Most smokers would have difficulty in describing just why they enjoy smoking. Most cigarette smokers often smoke to excess and are conscious of certain unpleasant effects from over-indulgence. The irritation of the respiratory mucous membranes, impairment of appetite, loss of sense of smell, greater fatigue by the end of the day, palpitation, irregular heart action and a lack of a sense of well being have all been described. And yet the temporary stimulation and even exhilaration produced by smoking a cigarette seem to be sufficient reason for smoking.

*Incidentally the Internal Revenue department collected the tidy sum of \$359,881,000 from the sale of cigarettes in 1930.

The temporary stimulation derived from a smoke is undoubtedly the result of the increase in pulse rate and blood pressure which is doubtless due to stimulation of the adrenal gland. That this physiologic reaction is due to the nicotine in the smoke seems fairly well established in spite of the other ingredients such as pyridine, furfural, hydrocyanic acid, ammonia and carbon monoxide, which have been isolated from tobacco smoke and to which the physiologic action of the smoke has been ascribed. Nicotine administered intravenously will produce the same rise in pulse rate and blood pressure and contraction of the peripheral arterioles that follow smoking. The smoke of cornsilk, on the other hand, contains pyridine and yet its use is not followed by these physiologic reactions. It is said, too, that the pedestrian on Fifth Avenue during heavy traffic absorbs more carbon monoxide than a heavy smoker.

This stimulation of pulse rate and blood pressure varies in degree in different individuals. The effect is temporary and in some tests conducted by Maddock and Collier did not last over twenty minutes. These same authors, among others, showed that the skin temperature, especially of the extremities, is substantially lowered by smoking a cigarette. The temperature of the fingers was lowered 0.7 to 6 degrees and that of the toes 1 to 4.5 degrees by one cigarette. The return to normal temperature varied from five to seventy minutes, that of the toes being slower than the fingers in its return.

Most observers have confirmed the findings of Cannon, Aub and Briggs that nicotine stimulates the adrenal glands. Haggard and Greenberg ascribed a rise in blood sugar following the smoking of a cigarette to adrenal stimulation. Blood sugars of over 130 milligrams were but little affected, while fasting blood sugars of 80 or 90 milligrams showed a rise to 120 or 140. Dill, Edwards and Forbes, on the other hand, were unable to confirm this observation. The smoking of one or several cigarettes failed in some sixty observations to show a variation of over 5 per cent in blood sugar values. These authors attribute the appeasement of hunger by smoking to the action of nicotine on the hunger contractions of the stomach, rather than to an elevation of blood sugar.

The absorption of nicotine in smoking is affected by many factors. The fact that many can smoke cigarettes and cannot tolerate a cigar or even a pipe suggests that, aside from the shorter smoke, cigarette smoke contains less nicotine. Rolleston states that cigarette smoke contains much less nicotine than that from a pipe, and cigar smoke lies somewhere between the two. Other factors, of course, have to be considered. There is more opportunity for nicotine absorption from inhaling than from simply puffing, from a dirty pipe than a clean one, from a thick or moist cigar than a dry slender one, from Virginia or Kentucky tobacco than from Turkish or Cuban. Cigarettes moreover vary considerably in their nicotine content—many of the cheap popular American brands being decidedly higher than certain more expensive brands.

The much discussed relation of cigarette smoking to thrombo-angiitis obliterans remains unsettled. Some think there is a distinct causative relation between the two. That some non-smokers develop the disease is a fact. There is no question but that those afflicted with the disease should not smoke, as such individuals show the same capillary contraction in the extremities from smoking as the normal individual.

An important question which has not been settled is whether change in the arteries may result from repeated capillary contraction in the vasa vasorum. This should apply to coronary vessels as well as peripheral ones. Time and further observations should supply the answer.

Individual sensitivity to smoking has not been given much consideration. Allbutt has written about a man who developed an intermittent pulse which lasted for days if he remained in a room for an hour or two where there was much tobacco smoke in the air. We recently encountered a patient who developed an irregular heart action, every other beat being an extrasystole, lasting two weeks following the smoking of a package of cigarettes in two days. Some know they cannot smoke without feeling ill and therefore do not smoke. Whether an appreciable percentage of smokers through a peculiar sensitivity to smoke sustain extreme functional responses of which they are unconscious but which may lead to deleterious organic change in the arteries remains to be seen.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the

Minnesota State Medical Association

B. J. Branton, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.

Dr. Fishbein Speaking

Dr. Morris Fishbein, editor of *The Journal of the American Medical Association*, spent two days and made six speeches, December 17 and 18, in Minnesota.

Two of these speeches, at St. Olaf's College and a Lions' Club luncheon in Saint Paul, also a radio talk, were before lay groups. The others were for doctors.

He reached, perhaps, 2,000 people in person in the course of the two days and those 2,000 have now, for the moment, at least, a saner, better balanced perspective of the place of medicine and its problems in relation to other phenomena of modern life.

They have, also, a new perspective on the social experimentation in general which so excites all types of men, these days. For so long as the vivid impression created by Dr. Fishbein remains there should be no danger of blind radicalism in matters of caring for the sick on the part of that two thousand.

It is unfortunate that Dr. Fishbein could not reach many more. He should reach especially the doctors—backsliders who fail to sense keenly their responsibility for presenting an organized front behind the leadership of the American Medical Association, and also those whose loyalty to their profession leads them, sometimes, to extravagant statement unsupported by the pointed truths which are always at the tip of Dr. Fishbein's facile tongue.

Social Experiments

Following are some paragraphs quoted from informal talks before members of the profession in Saint Paul: They are quoted here to take the place, this month, of the Questionnaire on Social Medicine announced for each issue.

"Social experimentation," said Dr. Fishbein, "requires many generations if it is to result in anything of lasting value. Results never appear

in the generation which embarked upon the experiment.

"The great trouble in America is that some of us are trying to bite off in one session of Congress what it has taken Europe fifty years to set in motion."

* * *

"I am constantly obliged to defend organized medicine against the charge of 'stand patism.'"

"We Are Not Stand Patters"

"We are not stand patters. We are willing to try any experiment which looks as though it might be the answer to the modern problem of care of the sick poor. But it must be a *controlled experiment*. And we must be assured that, so far as we can control it, standards of practice will not be lowered.

"The matter of human sterilization is a case in point. We may quite possibly arrive at the point where we want human sterilization in America. We should take a lesson from the experience of Germany where more has been bitten off than the German people will be able to chew for some time. It is the estimate of reliable sociologists that sterilization may reduce schizophrenia, for instance, by one-half of one per cent *at the end of seven centuries*.

"Our aim is not to block progress but to do our experimenting gradually. We shall achieve nothing but confusion if we crowd all our legislation into one session of Congress.

No Need To Fear

"Fortunately we have no need to fear any precipitate action on sickness insurance in Washington though insurance schemes may well be tried out in several states.

"We shall be permitted, I believe, to go slowly and work out a sound solution for the problem. We have good reason to believe that the Medical Advisory Board to the President's Committee on Economic Security will listen to the advice of the representatives of organized medicine; that the members will work together to make recommendations upon which all can agree and that the unfortunate split which marked the report of the Committee on Costs of Medical Care will not be duplicated in this board.

What President Roosevelt Says

"We have good reason to believe that the administration is not yet ready to take any action whatever on the difficult problem of sickness insurance. Other forms of welfare legislation are placed ahead of it in the President's list, among them, recovery, old age and unemployment insurance. And there is grave doubt as to just what can be done to take definite action on any of these within the law and without declaring an emergency.

"In that connection, here is the most recent statement of the President on the subject of care of the sick: *'I have repeatedly pointed out to you that the care of the sick is a LOCAL RESPONSIBILITY.'*

Medical Relief

"As to this matter of medical relief:

"There are only four states in the entire country where medical relief can be said to be working well. Just what form the fee bill takes in each instance becomes less important when the plan begins to work. Usually money becomes scarce then and medical bills have to be cut anyway regardless of schedules.

"The prospect for a satisfactory set-up is very good in Minnesota. But no set-up will work without dissatisfaction on the part of somebody.

"Certainly we should recognize that federal medical relief IS State Medicine as far as it goes. It's State Medicine the moment you set up a federal agency to pay for care of the sick.

"The important thing for organized medicine to insist upon is that it may enter into relief arrangements purely as emergency measures. Otherwise, it is obvious that we shall enter into other forms of State Medicine on the same basis.

Who Should Do The Work?

"Among the interesting points that the operation of federal relief has brought to our attention is the matter of what doctors shall be on the relief list. In Chicago the best men did not accept relief work. That allowed the poorest men to get the work. It also exhibited what may be expected from State Medicine. The poorest men will do the most of the work, with the resulting damage to standard of medical care.

"We believe that it is a mistake for the best men to stay out of relief work for that reason. All should take a share.

The Epstein Bill

"As to the so-called Epstein Bill (summarized in the December issue) which will be proposed by the American Association for Social Security to the States this winter, that bill is so bad that

it is not even reasonable to suppose that anybody will think of passing it.

"There is no doubt, of course, that the President can put a health insurance bill through Congress at this session if he really wants to do so.

"Fortunately the government, at this time, believes other things should come first. But that does not excuse us from organizing and standing solidly behind the American Medical Association in these matters. No smart government will conceivably act in the face of 100,000 physicians if they present a united front.

What About The Lower Third?

"The question is: Can we get the 40,000 who represent the lower third of medicine, so far as income goes, to sink their individual desires for the good of the profession? The Milbank plan for Health Insurance proposes to give these men \$7,000 a year for health insurance practice. To be sure, even if it were possible to pay such an amount—which is extremely doubtful—a large part of the \$7,000 would be taken away from them in special taxes and assessments. Can you make them see that?

"One of the most important pieces of evangelistic work any of us can do is to *carry by word of mouth* to that lower third the real aims of our organization.

The Surgical Catastrophe

"It seems obvious that what most laymen are interested in is not so much the cost of regular medical care but the cost of the surgical catastrophe. That is, the cost of the major operation which includes hospitalization and other expensive procedures.

"We have actual figures to show that the big insurance companies could indemnify for medical and hospital costs to the extent of, say, \$300 at a fee of not more than five to ten dollars a year.

"In spite of the fact that the surgical catastrophe is the real problem, they insure in England for common ills, only. When the catastrophe arrives the victim goes on charity. Insurance thus fails at the point where it is most needed.

* * *

"What may work well abroad, however, may not be good at all in America, though certainly sickness insurance is not working any too well anywhere in Europe. The Germans are in a muddle and they have been working at it since 1883.

"The English, who have been experimenting since 1911, are in a muddle, too. They are applying the homeopathic treatment of a little more of the same ailment to cure the disease.

"In both these countries sickness insurance was forced upon them as a political expedient.

"It is probable that no one scheme will work for the whole of America and each locality must make its own experiments and learn from its own mistakes. At any rate, no one has yet reasoned out a solution that will do for the country as a whole.

"Constantly I hear this: 'Why doesn't the American Medical Association suggest a plan?'

"The American Medical Association will do best, I feel sure, to work with the President's Advisory Board. I think we may have high hopes for this board and the results of its deliberations.

Better Than Weather Reports

"You may be interested to know that a program is under tentative preparation now, to be broadcast over the NBC network, that will answer the series "Doctors, Dollars and Disease" (see the November issue) of the Radio Advisory Council in Education which is being given every Monday night over the Columbia chain. The Columbia program is backed by the Foundations and reflects the Majority Report of the Committee on Costs of Medical Care.

"You may be interested, also, in the fact reported from a reliable source that the "Doctors, Dollars, Disease" program attracts *just slightly more attention than the weather reports.*

On "Lobbying"

"Personally I have always fought the idea of a so-called 'lobby' for the American Medical Association in Washington. Lobbyists are in disrepute. They are defined as persons who attempt to wield undue influence and as such are undesirable. The American Medical Association cannot afford to indulge in that sort of thing.

"On the other hand, we do know what is going on and we are represented at every hearing on bills that are of interest to the medical profession.

"When influence is to be brought to bear it should come from the states themselves, not from the American Medical Association. If all states were as well organized as Minnesota or Wisconsin we could write to each of them when an important matter pended and expect really effective action. In comparison with you men in the congressman's district the American Medical Association carries not a particle of influence with Congress.

"The American Medical Association should be known for the great welfare institution that it is, not a lobby for a 'medical trust.'"

January, 1935

The Council Meets

Annual Meeting

The 82nd Annual Meeting of the Minnesota State Medical Association will be held at the Minneapolis Auditorium.

Advance investigations and estimates were reported by Dr. E. A. Meyerding, secretary. The council agreed with Dr. Meyerding and officers of the Hennepin County Medical Society that no other available hall was adequate for the meeting, which, being timed to coincide with the summer meeting of the American Society for the Advancement of Science at the University of Minnesota, promises to be the biggest, in all respects, ever staged by the state society.

The question of paying for the meeting is a serious one since expenses will be several times as high as in former meetings.

The necessity for increasing the technical exhibit section to help cover these expenses was pointed out by the Council.

The meeting should be of unprecedented importance, scientifically, to physicians all over the Northwest. By the same token it should have an unusual importance and value to the commercial houses that supply physicians. Every member is to be urged by the Council to bring the meeting to the attention of representatives of these houses.

Tentative decision was made to hold the 1936 meeting at Rochester and the 1937 meeting in Saint Paul.

More Members

On the bright side of the membership picture was the report of the secretary of a paid membership of thirty-seven more in November 1934 than in November 1933. Paid membership to date is 2,055.

Dr. Engberg Suggests

The State Board of Medical Examiners feels that registration fees should be raised to afford a larger source of income to the Board and its work. Dr. E. J. Engberg, secretary, suggested a fee of \$4.00 to the Council which should be so fixed that only the board would have access to the funds.

The \$3,000 appropriated by the State Association for the use of the Board a year ago has not

been used. It will not be needed, Dr. Engberg assured the Council.

Acting upon authority of the House of Delegates of the Association, the Council authorized the Committee on Public Policy and Legislation and Mr. F. Manley Brist, attorney for the Association and the Board, to assist the Board with any modification of the present Medical Practice act which it may wish to propose at the next legislative session.

County Officers' Conference

Tentative dates for the County Officers' Conference and for the Northwest Medical Conference which follows the next day in Saint Paul, by a well established precedent, have been set for February 23 and 24. Final decision was left to the secretary and to the chairman of the Committee on Public Policy and Legislation.

Any member is welcome to attend either or both of these conferences, the first being devoted mainly to administrative problems and policies of county medical societies and the second to common policies and problems affecting organized medicine in all of the states of this region. Last year's conference brought representatives, officers and council members of nine states to Saint Paul.

Radio: Time For The Dentists

The Minnesota State Dental Association hopes to follow very closely in the footsteps of the medical association in its public health and organization program.

Permission to engage Dr. William A. O'Brien, radio speaker for the State Association, for a monthly broadcast on dental hygiene, on behalf of the dental association was asked of the Council.

The Council agreed to a four months' experiment during which time Dr. O'Brien may give a monthly talk on dental health provided the plan meets with the approval of Dr. O'Brien himself and of WCCO, which has so generously given its radio time for six years to the association. The dentists, of course, will pay costs.

No Loan Fund

The Council has no loan fund and deems it unwise to establish a precedent for making loans to individual members or their families.

It is the belief of the Council, expressed at this meeting, that it should be the business of

the local county or district medical societies to investigate and give what assistance they can.

Diabetes Book

Nurses, dietitians and hospitals will henceforth be allowed to purchase the booklet "Diabetes—How to Make it Harmless," published by the Committee on Diabetes of the Minnesota State Medical Association.

The booklet costs ten cents a copy and cash must accompany each order by ruling of the Council.

Abdominal Pain

A resolution of the Olmsted-Houston-Fillmore-Dodge County Medical Society asking for action on the part of the State Association to curb the sale of purgatives for relief of abdominal pain was referred to the Committee on Public Health Education, L. R. Critchfield, chairman, for conference with the pharmaceutical association and possible action.

What About Koochiching?

Does Koochiching county wish to remain in the Upper Mississippi Medical Society or will it transfer to the St. Louis County Medical Society?

This question holds up the complete re-districting of county medical societies, otherwise approved and operating since the Duluth meeting.

The Council will make a special effort to find out.

What The Masses Want

Said Edward A. Filene (Twentieth Century Fund), on the Doctors, Dollars and Disease program, recently: "The masses want health and they can secure health with adequate scientific attention, for a fixed charge which can be budgeted."

He meant, he said, "a charge so low that it can readily be paid by a large majority of our people."

The social, financial and biologic difficulties that must be encountered and solved before the masses can really budget and secure health according to the insurance plan received small attention from Mr. Filene.

Economical Ashland

From the *Saint Paul Dispatch*, Thursday, December 13:

REMOVAL OF TONSILS TO BE ASHLAND'S GIFT TO SCHOOL CHILDREN

Ashland, Wis., Dec. 13—(AP)—Accepting unanimously the suggestion of Mayor J. M. Dodd, a physician, the Ashland city council has voted to have the city finance tonsil removals for school children during the Christmas holidays.

The Christmas "present" for pupils with infected tonsils will cost the city only \$5 each, a saving of \$20 to \$30 on each case over usual expense. About 50 of 2,500 children need the operation, the mayor estimated, but all pupils will undergo examination.

Parents generally commended the proposal, but pupils pointed out it will cut down their holiday.

Literally, a double edged Christmas gift for Ashland boys and girls.

There is a careless, holiday air about this offer of Ashland's Mayor and City Council. But it makes light of an operation that is by no means as simple as it sounds.

Wholesale surgery is a dangerous business at any time of year. It may prove of very doubtful benefit to some of these Ashland children. Under these circumstances, no provision could possibly be made for the careful consideration of each case which is so essential before any such serious operation is performed.

As for the doctors who were to perform the operation for the absurd fee—they had much better make no charge at all.

Medicine Must Lead

"Put on a bold front," says Miss Jean McArthur, Chicago, Executive Secretary of the Public Health Education Committee of the Illinois State Medical Association, to the medical profession.

No other group has so disciplined and educated its members.

No other group has ever contributed so largely or so unselfishly to society.

Other groups assert themselves and the public likes their boldness.

Medicine must assume leadership. It is its right.

These and other interesting observations were

recently made as follows by Miss McArthur, whose office in Chicago supplies a news service and operates a flourishing and far-reaching speakers' service for lay groups in Illinois.

Read them.

"There are some, within the profession as well as without, who scoff at the code of ethics. They fail to realize that without such a code, medicine might be subject to the same up-to-date liberalism that gives jobs to vote-getters, judgeships in politics, and that sets murderers and kidnapers free. It is generally accepted that the medical profession has ranked and still ranks as one of the cleanest and best regulated that we have. Do you remember of hearing of any major scandal being placed at the doorstep of medicine? I know of none. What other profession can compete with such a record? Not long ago the dean of one of our law schools stated that medicine was farther ahead in the education and disciplining of its members than the legal profession.

"If these things be true, why does medicine hesitate to put on a bold and united front before the public; why does it allow itself to be intimidated by lay investigators who are paid for finding fault with all that pertains to medicine? No other group contributes more largely or unselfishly to society than medicine. Then why should it not be the dictator of policies? This is no time for hesitation or fear. Other groups assert themselves and the public likes this boldness.

"Medicine must assume leadership and it is its right. It should prohibit lay groups from taking over responsibilities which belong to the doctor. It should not allow itself to be controlled by those unfamiliar with its precepts.

"How can this be done? I think largely through a definite, dignified yet sure process of education of the public. Progress is being made, but results can be hastened by the support of every individual doctor. Coöperation of individuals and county medical societies is paramount.

"It might be well to consider what contribution to society and human welfare has been made by some institutions severely criticizing medicine. Can the history of the health of their employes, the wage scale, their working conditions be held up before the public view as perfect? Have the vast fortunes and endowments built up by such institutions been possible because of the oppression and the low wages of thousands of people employed therein? Have these same employes been able to afford medical care in the self respecting manner of their employers? If the public is going to blame medicine for all the troubles of people today, then the medical profession might well turn the searchlight upon this group of our public and give a report of their findings. I predict it would be anything but flattering."

Seen By The Secretary

Being the Log of the Month of a Medical Executive

Week of November 25—Home sick all week.

All Set!

Sunday, December 2—All day meeting of the Council.

It's settled. We hold our 82nd Annual Meeting at the Minneapolis Auditorium. That means the biggest meeting ever put on by the Association may be planned this year.

Here is a chance for a great, compact show with all exhibits and scientific demonstrations, moving picture shows and technical exhibits in one great hall.

Can we meet the expense? We can if we sell a sufficient amount of exhibit space. Actually we must sell nearly twice as much exhibit space as at previous meetings.

Monday, December 3—At the instruction of the Council, conferred with Dr. J. M. Hayes, president-elect of Hennepin County Medical Society, Dr. J. K. Anderson, chairman for local arrangements in Hennepin County, and Mr. Walsh of the Minneapolis Civic and Commerce Association.

Made final arrangements with Mr. Walsh about assistance from the Minneapolis Civic and Commerce Association. Incidentally the latter body is enthusiastic about the prospect of the Auditorium meeting which is to be held jointly with sessions of the American Association for the Advancement of Science and promises to assist in many ways toward making it a success.

Minneapolis Conferences

From this conference to another with Mr. William Brede, who has staged our exhibits so satisfactorily for the last three years; went over the Auditorium floor space and evolved a floor plan which is the best I ever saw for a medical meeting.

Along the two sides of the main exhibit hall, opposite each other, is ample space for exhibits and demonstrations for the University of Minnesota, the American Medical Association and the Mayo Clinic; also many individual exhibits and demonstrations. There will be plenty of room in each case for moving picture shows and any other type of individual demonstration. Flanking the hall on each side are ascending and descending ramps that can be used excellently for small theatres, and the regular Scientific Cinema. There is also a large stage which will be used for demonstration purposes. Beyond the ramps, there are roomy corridors for whatever overflow there may be. And it begins to look as though there would be an overflow!

Paid In Advance!

Tuesday, December 4—Another technical exhibitor paid for space today, which makes five spaces sold to date! That's a record.

Wednesday, December 5—Talked over WCCO, with Mrs. Harlow Hanson, Health Chairman, of the Minne-

sota State Federation of Women's Clubs, in the interest of the Christmas Seal campaign. Our contact, through the Minnesota Public Health Association, with Mrs. Hanson and this important group of women is of increasing value both to the physicians and the organizations involved.

New Seals

Thursday, December 6—Conference with the Minnesota Association for Crippled Children, Miss Jean Pearce, executive secretary, and Mr. Dan York, president, on the advisability of launching another Seal to raise funds for the crippled children's association. The work of this association is to be commended and supported. The Minnesota Public Health Association has cooperated with this association to put on its annual series of orthopedic clinics for several years and wishes to see it continue its program in Minnesota. There is grave danger for both associations, however, in another Seal sale, since such methods of fund raising are all too easily run into the ground.

December 8, 10 and 12—Radio talks over WCCO in Minneapolis and Saint Paul. Talked about modern methods of tuberculosis control and the Christmas Seal Sale.

Friday, December 14—Spoke at the annual luncheon meeting of the Board of Directors of the Hennepin County Tuberculosis Association. This is an affiliated unit of the Minnesota Public Health Association.

Saturday, December 15—The second meeting of the Committee on Scientific Assembly at the Lowry Hotel in Saint Paul.

Greatest Meeting

The program for the 82nd Annual Meeting that took shape at this meeting is by far the best and the most exciting ever outlined in this state.

Here are the high spots as tentatively determined at this meeting by the committee.

1. There will be at least twelve brilliant out-of-state speakers.

Two or three of these speakers are coming through the auspices of the American Association for the Advancement of Science which is meeting at the same time at the University, laying especial emphasis on its medical program as a consequence of this joint meeting.

2. Following the example of the Minnesota Radiological Society, which, last year, established a lectureship for the state meeting, the Northwest Pediatrics Society, the Minneapolis Surgical Society, the Ophthalmological Society, the Minnesota Academy of Medicine, and the Minneapolis Clinic Club will each bring a distinguished speaker for the meeting.

3. In addition, of course, there will be the annual cancer lecturer brought by the Citizens' Aid Society of Minneapolis, the speaker brought by the State Association itself and the Hennepin County Medical Society. That means an array of great names and both the A. A. A. S. and the medical societies are now busy combing the entire country for speakers.

Anemia Symposium

4. Probably Dr. W. P. Murphy or Dr. G. H. Whipple will be secured by the Hennepin County Medical Society for the symposium on anemia which is to occupy a joint session with the A. A. A. S. Tuesday morning, June 25. They were Nobel prize winners this year for their work on the disease.

Other great medical men in prospect are Dr. Max Cutler of Chicago, Dr. Harry Alexander of St. Louis, Dr. H. K. Pancoast of Philadelphia, Dr. R. G. Hoskins of Boston, Dr. Fred Adair of Chicago, Dr. Chevalier L. Jackson of Philadelphia, Dr. A. A. Cushing of Boston, Dr. F. G. Banting of Toronto and Dr. E. J. Berkeiser of Chicago.

5. Another joint session between the two associations will be held at the University Tuesday night and every afternoon session of both organizations will be at the Auditorium medical meeting since the A. A. A. S. will have no afternoon University sessions.

6. The Scientific Demonstrations which have become a distinctive feature of our Minnesota meeting will be expanded to include a great variety of subjects and processes.

Make Applications Now

It is to be hoped that everybody who wants to present a scientific exhibit or demonstration will make application to the committee now. Space will be at a premium.

7. Twin City medical men will be represented on the program in a clinic which will consume the two first hours of the scientific program Monday morning, June 24. After them will come the hour of demonstrations which will be repeated in the afternoon and each morning and afternoon during the meeting.

8. Other lecture sessions must be reserved for the guest speakers who will be given ample time to make their appearances of real value.

Dr. W. F. Braasch and Dr. Buie of Rochester were in the office today to discuss plans of the Medical Economics Committee and, incidentally, entertainment for Dr. Morris Fishbein, who spends Monday and Tuesday of next week in Minnesota.

Monday, December 17—Most of the day with Dr. Fishbein, who talked under the auspices of the Ramsey County Public Health Association before a general luncheon meeting of service clubs called by the Lions at the Saint Paul Hotel. This was the first of five talks by Dr. Fishbein in two days, during which time the pointedness, interest, and wide range of subjects covered in this extraordinary speaker's performance never flagged for a moment. In the evening went to Northfield, where Dr. Fishbein talked at St. Olaf's College.

Tuesday, December 18—Nearly all day with Dr. Fishbein.

The afternoon was devoted to an informal conference with the Council followed by dinner with invited guests at which Dr. Fishbein outlined the situation at Washington, in Chicago and in all of the states of the country with regard to the Medical Relief and Sick-

ness Insurance and all of the other vital problems of medicine today.

In the evening another talk before a crowded meeting in the rooms of the Ramsey County Medical Society.

Wednesday, December 19—Attended the annual Christmas meeting of Scholia, organization of educators of the Twin Cities. This is a highly valued membership which dates back many years.

Total Is Thirteen

Thursday, December 20—Well! The meeting looks like a success. Our friends have come to the rescue. A total of thirteen spaces has been sold to date to eleven different exhibitors.

Friday, December 21—Conference on Minnesota's fee schedule for Medical Relief with Dr. H. M. Johnson and Mr. Brist.

Saturday, December 22—Merry Christmas!

Minnesota State Board of Medical Examiners

Anoka Masseur's License Suspended For Three Months

In the Matter of the Suspension or Revocation of the License of N. A. Thomas, Masseur.

At a meeting of the Minnesota State Board of Medical Examiners held on December 8, 1934, the massage license of Mr. N. A. Thomas, Anoka, Minnesota, was suspended for a period of three months.

Mr. Thomas had been cited before the Board to show cause why his license should not be suspended or revoked. The citation charged Mr. Thomas with conduct inimical to the best interests of the public, and was based upon certificates signed and furnished by Mr. Thomas to the school authorities at Anoka certifying as to the physical condition of certain school children in the public schools of Anoka. These certificates are the regular forms used by the Minnesota State High School League calling for a *physician's certificate*, as to the condition of the heart, blood pressure, lungs, feet, spine and urine, also whether or not a hernia was present. This certificate is required preliminary to the participation of these children in school athletics. Mr. Thomas admitted signing the certificates, and in view of the fact that Mr. Thomas does not hold a license to practice medicine in the State of Minnesota, but is only licensed as a masseur, the Board found the charges true and his suspension followed.

Medical Board Denies License To Fargo Applicant

J. G. Halland, M.B., Fargo, North Dakota, was denied a license to practice medicine in the State of Minnesota by the Minnesota State Board of Medical Examiners on December 8, 1934. Mr. Halland graduated from the University of Minnesota in 1919, with the degree of Bachelor of Medicine. He was licensed to practice in this State by the Medical Board but had his license revoked in November, 1931, because of habitual indulgence in the use of drugs. Halland's entire case was reviewed by the Medical Board and the Board was of the opinion that the best interests of the public required that no license be issued to Mr. Halland.

(Note: The degree "Doctor of Medicine" was never conferred upon Mr. Halland.)

In Memoriam

Kenneth Simms Caldwell

1892-1934

Dr. Kenneth S. Caldwell, Saint Paul, was born at Farmington, Minnesota, March 13, 1892. Graduating from the Central High School, Saint Paul, in 1911, he attended Hamline University for a year and then the University of Minnesota, where he received his B.A. degree in 1916. While taking his medical course he joined the American Red Cross hospital unit, which was organized at the University under the direction of Dr. A. A. Law in February, 1918, and was honorably discharged from this unit May 29, 1918, to accept appointment as Assistant Surgeon in the U. S. Naval Reserve Force. He received his degree in medicine from the University of Minnesota in June, 1918, and reported for duty at the Great Lakes Training Station. In December of the same year he accepted the appointment as Assistant Surgeon in the Navy and served on the U. S. S. New York and U. S. S. Jason with the Pacific Fleet. On account of physical disabilities incurred in service Lieutenant Caldwell was retired from active service December 14, 1921.

In 1922 Dr. Caldwell was appointed medical examiner for the U. S. Veterans Bureau and opened an office the same year at 642 Lowry Building, Saint Paul. Upon the establishment of medical units for the Minneapolis and Saint Paul post offices, Dr. Caldwell took charge but later devoted his energies to the Minneapolis office alone until 1930.

In 1931 Dr. Caldwell retired from practice on account of ill health. Death occurred October 2, 1934, following an accidental gunshot wound of the chest.

Dr. Caldwell was married October 12, 1918, to Miss Margaret M. Peterson of Saint Paul, who with their two sons survives him. He was a member of the Theta Delta Chi academic fraternity and Nu Sigma Nu medical fraternity, Ramsey County Medical Society, Minnesota State and American Medical Associations.

Energy Claims for Foods.—The Committee on Foods reports that all foods except the simple mineral foods and water contain chemical energy available for use by the healthy body to support the many activities and life processes and incidentally to maintain temperature. This use of the term "energy" in defining the caloric energy value of foods should not be confused with the popular usage signifying the state of extreme well being, good health, vitality, strength, vigor or endurance. Food advertising should correctly inform the public of the energy values of foods in carefully chosen terms that may be properly interpreted. The distinction between the caloric and popular senses of the word "energy" must be recognized and observed. The terms "food value" or "nutritional value" should not be used synonymously with "food-energy value." The food or nutritional value of a food includes the vitamin, mineral, protein, fat, and other values. (Jour. A. M. A., November 10, 1934, p. 1452.)

COMMUNICATION

To the Editor:

Educators have claimed that the rank and file of the medical profession are several years behind in medical education—ten years has been suggested.

Editors have stated that if the general practitioner would but studiously read their offerings, he would not need to be behind at all, and that if back articles have to be referred to, the indexes furnished are adequate and simple.

The general practitioner represents that neither of these classes of critics is right; that there are indeed some men who are a quarter of a century behind, but that the majority strive earnestly and efficiently to keep up.

The busy man unable to keep up by reading goes out periodically and gets pumped up at the University. To be of use to this man an article on a desired subject must be available at a time when his patient's condition calls this subject to his notice—often at the end of fatiguing day. Indexes are consulted, the exact title may be doubtful, his principal Journal confronts him with some 240 long columns per year; if recent articles are looked for the search may be even more laborious. Consultation of current writings might, he thinks, be made more easy for him.

To the end that he keep posted and stop using discredited methods, it would seem to one general practitioner that articles of immediate interest in therapeutics might be indexed in special type; that special indexes running back years might list these items only, the ordinary indexes sufficing where articles are sought for general educative purposes.

H. B. AITKENS, M.D.

Editor's Note: The title of a paper is important in that it should signify the particular phase of the general subject treated. From a cursory perusal of the titles of recent articles which have appeared in MINNESOTA MEDICINE, it seemed in most cases possible to determine from the title which ones deal or are likely to deal with therapy.

It would not be difficult to use special type for indexing articles on therapy, but unless the practice were generally adopted by journals we fear such a procedure would be lost on the general reader.

*Just to remind you—
Have you paid for
your Christmas Seals?
Your help is needed.*

MINNESOTA MEDICINE

OF GENERAL INTEREST

OF GENERAL INTEREST

Dr. Dwight L. Wilbur of Mayo Clinic was in Mankato recently, and gave a talk to the doctors on peptic ulcer.

* * *

Dr. B. Pearson has located in Shakopee following the completion of his internship at St. Luke's Hospital, Saint Paul.

* * *

Dr. Leo R. Prins has moved his office to 229 Lowry Medical Arts Building, Saint Paul, where he is associated with Dr. F. E. B. Foley.

* * *

Dr. H. T. Sherman, formerly of Echo, Minnesota, has moved to Plainview, Minnesota, where he has taken over the practice of Dr. W. B. Stryker.

* * *

Dr. T. C. Kelly of Mankato, who, in the past year, has been through a serious illness, is back in his office again and enjoying good health.

* * *

The annual meeting of the Mankato physicians was held at St. Joseph's Hospital, where a very fine dinner was served by the Sisters of the hospital.

* * *

Dr. W. D. Francis of Morristown, Minnesota, is at St. Luke's Hospital, Saint Paul, where he has been operated upon for osteomyelitis of the left femur.

* * *

Dr. G. A. Dahl of Mankato has gone on a six weeks' vacation, touring the southern states and Mexico. He was accompanied by Mr. and Mrs. Rudolph Bierbauer of Mankato.

* * *

Dr. M. M. Sarnecki has become associated with Dr. Thomas Gratzek with offices at 957 Arcade Street, Saint Paul. Dr. Sarnecki completed his internship at the Ancker Hospital, Saint Paul, in July, 1934.

* * *

Dr. C. W. Froats of the Duluth Clinic was elected to membership in the Central Association of Obstetricians and Gynecologists at the annual meeting of the organization in New Orleans, November, 1934.

* * *

Dr. Emil Goetsch of Brooklyn will be the guest speaker at the annual meeting of the Minneapolis Surgeons' Association, January, 1935.

gical Society February 7, 1935. Dinner will precede the meeting at the Minneapolis Club.

* * *

Dr. Henry E. Michelson, Professor of Dermatology at the University of Minnesota, has been chosen to present the subject of "Newly Recognized Forms and Facts in Tuberculosis of the Skin" before the Ninth International Congress of Dermatology and Syphilis, which will meet in Budapest in 1935.

* * *

Dr. Arthur W. Neutzman, physician and surgeon, who has been practicing in Wisconsin and has been associated with the staffs of the hospitals at Wausau in that state, has become affiliated with Dr. S. B. Haessly and Dr. Carl A. Traeger of the Central Clinic, Faribault, Minnesota.

* * *

Drs. Martin Nordland and T. H. Sweetser of Minneapolis were recently elected to membership in the Western Surgical Association. Dr. Arnold Jackson, Madison, Wisconsin, is the newly elected president and the next meeting of the Association will be held in Rochester, Minnesota, in December, 1935.

* * *

To provide the program of the Iron Range division of the St. Louis County Medical Society, a group of some twenty-five physicians from Duluth traveled in a chartered bus to Eveleth for the December meeting, December 20, 1934. The program was the request type to repeat a "Pathological Conference" demonstration similarly carried out a year ago. Ten cases and specimens were discussed and demonstrated, meeting with a very enthusiastic reception.

* * *

Dr. Edward David Greenberger, recently associated with the x-ray department of Bellevue Hospital, has taken charge of the x-ray department of the Mankato Clinic. He is a graduate of Bellevue Medical School, interned at Mount Sinai Hospital and Bellevue Hospital, New York City. He is a diplomat of the National Board. Dr. A. J. Wentworth, who has had charge of this department at the clinic for many years, is taking a year's vacation, and Dr. Greenberger is taking his place.

* * *

Following upon the Public Health drive in Duluth to discover the possible presence in the schools of tuberculous teachers, legal action has been taken by a certain teacher group to determine who shall pay for chest films where positive Mantoux tests occur. It is rumored that certain open cases have been found. The teachers apparently do not oppose the propriety of the test. Similar tests have been accomplished in all the St. Louis County schools under the instruction of the County Health Officer, Dr. C. A. Scherer.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for January

The Minnesota State Medical Association Morning Health Service.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

- January 1—(Holiday).
- January 8—Insomnia.
- January 15—Appendicitis.
- January 22—Problems of the Blind.
- January 29—Cancer Research.

Minneapolis Surgical Society

January 10, 1934, 8:00 P. M.

Todd Amphitheater, University Hospital
Papers read to be limited to ten minutes only.

1. Dr. N. Logan Leven—by invitation.
Visualization of the biliary tract by injection of opaque media postoperatively.
2. Dr. Vernon L. Hart—by invitation.
Subastragaloid and triple arthrodesis.
3. Dr. William T. Peyton.
The treatment of some types of arteriovenous aneurysms and cavernous hemangiomas.
4. Dr. Ralph T. Knight.
Current events in anesthesia.
5. Dr. Herbert A. Carlson—by invitation.
Variations in the technic of thoracoplasty.
6. Dr. C. Donald Creevy—by invitation.
Litholapaxy.
7. Dr. Melville H. Manson—by invitation.
Biological phenomena in Hodgkin's disease.
8. Dr. Owen H. Wangenstein.
The surgery of hyperinsulinism.

Anyone interested is cordially invited to attend.

Southeastern Surgical Congress

The Southeastern Surgical Congress will hold its sixth annual assembly in Jacksonville, Florida, March 11, 12 and 13, 1935.

The states composing the Congress are Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

Some of the most distinguished surgeons in the country representing the different surgical specialties have been invited to appear on the program. A partial list of those who have already accepted places is as follows: Doctors Walter C. Alvarez, Perry Bromberg, Hugh Cabot, Willis C. Campbell, George W. Crile, John F. Erdmann, Paul Flothow, Ralph Green, Arthur Hertzler, C. Jeff Miller, Alton Ochsner, J. C. Patterson,

J. Knox Simpson, J. W. Snyder and W. A. Weldon.

For information address Dr. B. T. Beasley, Secretary-treasurer, 1019 Doctors Building, Atlanta, Georgia.

Blue Earth Valley

On October 25, 1934, the Blue Earth Valley Medical Society met at the Constans Hotel, Blue Earth. There were twenty-five members present and Dr. T. W. Weum of Minneapolis spoke to the society on the subject of Office Gynecology. The following officers were elected:

President, H. W. Sybilrud, Briceyn; vice president, A. W. Sommer, Elmore; secretary-treasurer, W. C. Chambers, Blue Earth; trustee, John Folta, Ceylon; delegate, A. J. Henderson, Kiester.

Clay-Becker County

At the annual meeting of the Clay-Becker County Medical Society held on December 14, 1934, the following officers were elected:

President, Arnold Larson, Detroit Lakes; vice president, J. W. Duncan, Moorhead; secretary-treasurer, R. V. Jolin, Lake Park; delegate, T. S. Soine, Barnesville; alternate, R. V. Jolin, Lake Park.

Red River Valley

The following officers of the Red River Valley Medical Society were elected at the annual meeting of the Society held on December 11, 1934, at Crookston:

President, A. W. Swedenberg, Thief River Falls; vice president, A. R. Reff, Crookston; secretary-treasurer, C. W. Froats, Thief River Falls; delegates, O. E. Locken, Crookston, and C. M. Adkins, Thief River Falls; alternates, V. A. Weed, Red Lake Falls, and J. A. Roy, Red Lake Falls.

Washington County

The annual meeting of the Washington County Medical Society was held December 11, 1934, at 6:30 p. m., at the Grand Cafe, Stillwater. After the usual order of business, election of officers took place:

President, George F. Brooks, Stillwater; first vice president, V. C. Thompson, Marine-on-St. Croix; second vice president, E. V. Strand, Bayport; secretary-treasurer, E. S. Boleyn, Stillwater; censor, R. J. Josewski, Stillwater; delegate, E. S. Boleyn, Stillwater; alternate, W. R. Humphrey, Stillwater.

Dr. Gunnar Linner, institutional physician at Minnesota State Prison, was elected a member of this society.

A committee of three was appointed to study the old and the new County Society Constitution as adopted by the House of Delegates at the 1934 Duluth meeting.

WOMAN'S AUXILIARY

WOMAN'S AUXILIARY

President—Mrs. MARTIN NORDLAND, Minneapolis

Editor—Mrs. C. F. EWING, Wheaton

East Central Minnesota

Two meetings of the East-Central Medical Auxiliary were held this last fall. The first was held on August 30, 1934, at Anoka. Dr. and Mrs. E. E. Gates acted as hosts. The meeting was held at the Gates home and then dinner was served at the Methodist Church. Later the women were entertained at the home of Dr. and Mrs. Schlesselman.

The second meeting was held October 12, 1934, at the School for Epileptics, Dr. McBroom and his wife acting as hostesses.

The next meeting will be held in Cambridge.

The officers for 1934 are: President, Mrs. H. C. Cooney, Princeton; secretary-treasurer, Mrs. H. J. Kooker, Milaca; vice president, Mrs. Charles Swenson, Braham.

* * *

Mower County

The Mower County Auxiliary meets the fourth Monday of each month. The annual meeting is held in February. At the regular meetings, members sew for the local hospital.

The present officers are: President, Mrs. G. E. Hertel; vice president, Mrs. L. G. Flanagan; secretary, Mrs. R. S. Hegge; treasurer, Mrs. Paul Leck.

A one o'clock luncheon was enjoyed at the Hotel Austin by members of the Mower County Auxiliary, December 6, 1934, fourteen being in attendance. Two out-of-town guests, Mrs. Martin Nordland, state president, and Mrs. W. M. Roberts, state publicity chairman, both of Minneapolis, were present. After a short business meeting, Mrs. J. Haven, program chairman, introduced the speakers, Mrs. Nordland and Mrs. Roberts, who both gave interesting messages in connection with "The Object of the Medical Auxiliary." Mrs. J. M. Thomson of Brownsdale was an out-of-town member present.

* * *

Renville County

The Renville County Medical Auxiliary met at the home of Mrs. R. C. Adams at Bird Island, November 6, 1934. Mrs. Loenhold from Hector gave a travelogue on Scotland, and Mr. Larson, Field Secretary for the State Medical Society, addressed the ladies. All members were present. Dr. and Mrs. Hollbrook, from Mankato, and Mr. Larson were guests at dinner, at which there were thirty-two doctors and their wives.

On December 4, the Auxiliary met at the home of Mrs. Cosgraff at Olivia. This was in the form of a Christmas party. A report was given as to the tuberculosis contest essays written in the county. Eleven members were present. Acting hostesses were Mesdames Fawcett and Presinger of Renville.

January, 1935

Rice County

The Rice County Medical Auxiliary sponsored a dinner at the Hotel Faribault in Faribault, Monday evening, November 5, 1934. The guests were the members of the Rice County Medical Society and their wives. Due to the unavoidable absence of Dr. Norman Johnson of Minneapolis, who was to have addressed the meeting, Dr. C. D. Lufkin of Northfield gave an interesting account of his experiences in the Hawaiian Islands. Mrs. O. S. Neseth of Kenyon, the Auxiliary president, introduced the speaker.

The Rice County Medical Auxiliary elected the following officers: President, Mrs. O. S. Neseth, Kenyon; vice president, Mrs. Warren Wilson, Jr., Northfield; secretary, Mrs. J. A. Gates, Kenyon; treasurer, Mrs. M. L. Mayland, Faribault. At the September meeting, Mrs. Maryland asked that her resignation as treasurer be accepted, and in her stead Mrs. A. F. Kieske, Faribault, was elected treasurer.

The Auxiliary arranged a meeting with the Parent-Teacher Association of the Garfield School, Faribault, on November 13, to hear Dr. Meyerding speak on "Public health and its relation to tuberculosis." The five other P. T. A. units of the Faribault schools joined with Garfield school and the members of the medical auxiliary from Faribault, Northfield and Kenyon to form a large and appreciative audience.

* * *

Scott-Carver County

Members of the Scott-Carver medical society gathered at a 7 o'clock dinner at the Rock Spring cafe, Shakopee, Tuesday evening, November 13, 1934. Twenty-two doctors, and ten members of the ladies' Auxiliary were present. After the dinner the doctors convened at the city hall, where Dr. Reuben Johnson and Dr. C. J. Ehrenberg, Minneapolis, addressed them. The ladies repaired to the home of Mrs. F. H. Buck. The Minneapolis physicians were accompanied by their wives, who were guests of the auxiliary.

* * *

Stearns-Benton County

Meetings of the Stearns-Benton Medical Auxiliary are held on the first Tuesday of every month at one of the homes of the members, where members sew on layettes or whatever else is needed, mostly at the time for the Loan Chest, to which physicians and nurses have access, articles to be used in homes that have need of them.

Present officers are: President, Mrs. Harry B. Clark; vice president, Mrs. Wm. Friesleben; recording secretary, Mrs. E. M. Kingsbury; corresponding secretary, Mrs. John J. Gelz; auditor, Mrs. Julius Buscher.

The auxiliary donated \$5.00 to the Red Cross and sponsored the Christmas Seal Radio Contest, giving \$2.50 to a boy and girl, winners in this county.

* * *

West Central Minnesota

Mrs. E. A. Eberlin of Glenwood was reelected president of the West Central Medical Auxiliary, and Mrs. A. Giesen of Starbuck was reelected secretary-treasurer at the last meeting, which was held at Morris.

PROCEEDINGS of the MINNESOTA ACADEMY OF MEDICINE

Meeting of November 14, 1934

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 14, 1934. Dr. Archa Wilcox, President, in the chair. The meeting was called to order at 8 p. m.

There were forty-nine members and one guest present.

Minutes of the October meeting were read and approved.

Upon ballot, the following men were elected as candidates for membership:

Dr. R. G. Allison, Minneapolis, Active Membership.

Dr. H. W. Grant, St. Paul, Active Membership.

Dr. R. D. Mussey, Rochester, Associate Membership

The scientific program was as follows:

SURGICAL TREATMENT OF RETINAL DETACHMENT

FRANK E. BURCH, M.D.

Saint Paul

Dr. Burch read a paper on the above subject and showed numerous lantern slides. (To be published in MINNESOTA MEDICINE.)

Discussion

DR. W. E. CAMP (Minneapolis): It has been my privilege to assist Dr. Burch in two or three of these operations at the University Hospital and also to observe several other cases and to see his uniformly good results. I think his success depends on two factors: first, his careful technic, observation, and treatment after operation; and, second, because of his selection of cases for operation. It is not to be expected there would be a good result in cases of long standing.

In speaking of detachment, there are two kinds of detachment of the retina; the kind that is due to a pushing off of the retina due to fluids coming through from the vitreous and, second, those which are due to a pulling off of the retina due to cyclitic exudates. In these latter cases re-attachment is impossible and good vision could not result. But a careful selection of serious detachment cases, combined with our modern technic, gives good results. I am very pleased to hear this paper and see the slides which Dr. Burch has shown.

DR. ARTHUR E. SMITH (Minneapolis): I think the substitution of diathermy for the cautery has been a great step in advance. The effect of cautery is difficult to control and there is often damage done to sub-jacent tissue by the transmitted heat. Dr. Burch is to be congratulated on this fine series of cases.

DR. C. N. SPRATT (Minneapolis): One of the sad chapters in ophthalmology is the treatment of detachment of the retina. In the last five or six years, however, much has been accomplished, and more articles have been written on this subject during this short period than the previous fifty years. Untreated idiopathic

detachment invariably leads to blindness. Certain traumatic cases may recover spontaneously. The operative cure after modern methods varies from 30 to 50 per cent. Vogt of Zurich states that in 1881, Martin, de Wecker and de Luca used ignipuncture for the treatment of detachment and that in 1896 Deutschmann attempted to cure detachment by ignipuncture at the site of the tear. Galezowski, in 1902, systematically practiced ignipuncture in the treatment of detachment of the retina. Gonin's work has aroused interest in the treatment of detachment. The use of diathermy has simplified the operation and is less likely to be followed by complications than when the cautery is used. Vogt, in the November number of the *British Journal of Ophthalmology*, advocates the use of the cathode or negative pole in detachment of the retina. This is interesting, as Verhoeff, of Boston, seventeen years ago treated detachment by the use of the negative pole. I have had no experience with this but have used diathermy for the past two years.

DR. ARNOLD SCHWYZER (St. Paul): I would like to ask Dr. Burch why it is so very important to find the hole in detachment?

DR. BURCH (in closing): Dr. Spratt's remarks about evaluation of technic are apropos. Undoubtedly when Vogt, before the Swiss Ophthalmological Society in May, 1934, described the use of galvanism with very low milliamperage as a means of inducing adhesive choroiditis, he may have contributed another important improvement which, although still in the experimental stage, may work out satisfactorily. It is possible also that cauterizing the surface of the sclera with the electric thermophore, as I understand is being tried out at the Medical Center in New York, may offer something of value in the evolution of treatment.

So far as locating the hole and absolute occlusion is concerned, that is the sine qua non in the matter of surgical therapy. It is absolutely proven that best results follow occlusion of this communication between the vitreous and the subretinal space, so that fluid will not continue to pass through the retinal hole or tear and produce a redetachment afterward. At least, one must produce an adhesive choroiditis and wall off the hole so that extension of the detachment cannot occur. It is the first principle in correct surgical treatment of retinal detachment.

HYPERTHYROIDISM IN CHILDREN

MARTIN NORDLAND, M.D.

Minneapolis

Dr. Nordland read a paper on the above subject and reported 11 cases.

Summary

Hyperthyroidism in childhood is observed rarely enough in the experience of the average physician to arouse unusual interest. This is manifested by the occasional appearance in the literature of a single case

report of this disorder. The authors of articles discussing this subject have variously employed the upper age limits of 12, 14 and 16 years. In the review of the literature it is evident that the number of cases increases rapidly after the 12th year.

Dinsmore, in 1926, reported 48 cases of hyperthyroidism in children treated at the Crile Clinic. In the discussion of this subject in 1932, Rankin reported 91 cases of exophthalmic goiter in children treated at the Mayo Clinic. This number represented 0.6 per cent of a total of exophthalmic goiters treated. More than 90 per cent of the cases of hyperthyroidism in children occurs in females. In this paper, eleven cases of hyperthyroidism in children, from 8 to 16 years of age, are reported.

L. D., age 16 years.

		Aub-Dubois			
Normals	Sage-Aub-Dubois	Krogh modif.	Benedict Talbot	Bedale McLeod	Bailey
2-17-34	Plus 51.3%	Plus 78.1%	Plus 91.8%	Plus 84.5%	Plus 69.5%
Ligation and tonsillectomy in May, 1934.					
10- 2-34	Plus 38.7%	Plus 55.7%	Plus 69.3%	Plus 61.6%	Plus 45.5%
Thyroidectomy October 6, 1934.					
10-17-34	Plus 6.7%	Plus 11.4%	Plus 20%	Plus 15.5%	Plus 4%
Normals.					
Sage Aub-Dubois		Calories per sq. meter hour.			
		15 years	43 calories	16 years	40 calories
Krogh's modification		Calories per sq. meter hour.			
		15 years	39.5 calories	16 years	38.3 calories
Benedict-Talbot		Calories per kilo body weight.			
		15 years	51.7 calories	16 years	52.5 calories
Bedale McLeod		Calories per sq. meter hour.			
		15 years	38.34 calories	16 years	36.96 calories
Bailey		Calories per sq. meter hour.			
		15 years	42 calories	16 years	41 calories

Etiology

The factors contributing to the etiology of hyperthyroidism in children have been attributed to (1) the administration of iodine for prophylactic measures, (2) focal infection, and (3) heredity.

Symptoms

The cardinal symptoms of hyperthyroidism in children are in general similar to those in adults. There are, however, some interesting and *distinct differences*. The uncommon nervousness and irritability noticed first by the parents usually marks the onset of this disease in children. (1) Exophthalmus and (2) enlargement of the neck occur somewhat earlier than in adults. This may be attributed to the shorter duration of the disease in children. (3) Tachycardia and palpitation are present as in adults but the secondary symptoms such as dyspnea, edema and arrhythmia seldom if ever occur in children. (4) Gastro-intestinal disturbances such as vomiting and diarrhea are more common in children than in adults, while the (5) tremor and (6) loss of weight occurring in the adult is seldom observed in the child. As contrasted with the mental confusion which exists in the severe cases in adults, the (7) mentality remains remarkably clear in the severe cases in the child. Two of our cases illustrated this point very well. Considerable difference of opinion exists as to what may be considered the normal (8) basal metabolic rate in children. DuBois states that the question is not settled. He points out that the variations in the findings of competent observers are very uncertain, especially in the excitable hyperthyroid child.

January, 1935

BASAL METABOLIC STUDIES

TABLE I

Mrs. E. R., age 37 years.					
Standard	Sage	Krogh's Mod.	Harris	Dreyer	Bailey
Plus	Aub-Dubois	Aub-Dubois	Benedict		
Normals	33.3%	43.1%	37.2%	36.5%	33.3%
Sage Aub-Dubois					
36.5 calories per sq. meter hour.					
Harris Benedict					
58.3 calories based on combination of weight, and age, height flat figures.					
Dreyer					
58.6 calories, being 10% reduction from figure for males, based on weight and age.					
Krogh Modification of Aub-Dubois					
33.9 calories per sq. meter hour.					
Bedale McLeod—no figures for adults.					
Bailey—36.5 calories per sq. meter hour.					

Table I shows the rather constant findings by the various methods of examination in the adult. Table II illustrates the marked variation in the basal metabolic reading after computation by the various methods of examination for the child.

Treatment

The medical treatment employed in the case of hyperthyroidism in children is relatively the same as that used in the adult. Preliminary hospitalization is more desirable in the child than in the adult. Ten drops of Lugol's solution three times a day is given for a variable length of time depending upon the individual severity of the case and the response to medication. One week is sufficient in the average case. Gaining of weight and slowing of the pulse are the main factors in the selection of the time for operation. Medication is always employed only as a pre-operative measure.

The graded surgical procedures are still useful in children in spite of the advantages gained by the use of Lugol's solution. Because of the marked tendency for growth and hyperplasia of the residual stump, sub-total resection of the thyroid should be equally radical as that in adults. An effective sedative the night previous to the operation, as well as the following morning preceding the operation, is advantageous. The anesthetic should always be general, preferably ethylene or nitrous oxide gas.

The meeting adjourned.

R. T. LAVAKE, M.D., Secretary.

TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

MEETING OF OCTOBER 18, 1934

The President, DR. MARTIN NORDLAND, in the Chair

INGESTED FOREIGN BODIES IN THE GASTRO-INTESTINAL TRACT REQUIRING SURGICAL REMOVAL

George D. Eitel, M.D., F.A.C.S.

The presence of foreign bodies in the gastro-intestinal tract, while always of interest, is by no means uncommon. They are found in individuals of all ages and are either ingested accidentally or deliberately. Deliberate ingestion may result from an act of insanity, a dare, a habit or medicinal therapy. Accidental swallowing of foreign bodies is therefore the most common.

The purpose of this paper is to point out the locations in the gastro-intestinal tract where foreign bodies are most likely to become lodged, depending on the type of foreign body present. It is also my purpose to outline the treatment when surgical removal is indicated. During the course of the paper I will present three cases which Dr. Wilcox and I have recently had, in which surgical removal was instituted, as well as cite other illustrative cases which have appeared in the literature relative to the subject under discussion.

The literature is filled with reports of every known object that has found its way into the gastro-intestinal tract that has either become lodged in the esophagus, or if able to reach the stomach has then been passed on to be expelled per anum with the patient remaining none the worse for the experience.

How are we to know that a foreign body is present? If the patient is an adult we are usually able to get the information as to the foreign body that has been ingested. In babies and children the mother is only aware of the accident because of a choking spell or because a pin or small object which served as a plaything is missing. Other cases are never suspected until the foreign body becomes lodged and causes either a gastro-intestinal irritation manifested by diarrhea and pain, a partial obstruction or a complete obstruction. An x-ray plate will always show those objects which are opaque. If the object is non-opaque it is often necessary to administer a small amount of barium which will coat the object and show its location and size. Many foreign bodies are ingested by children and the condition never diagnosed.

By means of the x-ray we are usually able to tell what object has been swallowed. This will enable us to tell what course we are to follow and what dangers are apt to confront us. The ordinary small objects such as coins, closed safety pins, fruit stones, rings, screws, tacks, thimbles and keys, we know will always pass through. The object is usually passed and recovered in the stool in from two hours to four weeks. It is now the general opinion that the majority of foreign bodies that enter the stomach spontaneously will also pass spontaneously through the pylorus and intestinal canal.

There are other foreign bodies such as open safety pins, needles, nails, long pins, hair and bobette pins, crochet hooks, screw drivers, pencils, medicine droppers, enteroliths and hair balls, that become lodged either because they are unable to negotiate the fixed turns or become impacted in a narrowed portion of the intestinal tract.

Dr. Habbe, a roentgenologist from Milwaukee, reports having watched the progress of a double edged Gillette razor blade pass through the entire gastro-intestinal tract without causing symptoms or discomfort. It was finally removed from the rectum by means of a proctoscope.

Dr. Paul F. Eve of Philadelphia in 1857 collected from different sources fifty instances of swallowed foreign bodies in which thirty-five patients recovered and fifteen died. Some of the swallowed substances were expelled without causing obstruction, while others after obstructing certain parts of the alimentary canal were expelled spontaneously, extracted artificially, or remained fixed in the body to cause death.

The points in the gastro-intestinal tract which are most likely to cause a delay in the passing of a foreign body are:

1. The pharyngeal and cardiac areas of the esophagus.
2. The stomach.
3. The junction of the second and third portions of the duodenum.
4. The terminal portion of the ileum.
5. Meckel's diverticulum if present (occurs in 2 per cent of normal individuals).
6. The ileo-cecal region because of the angular insertion of the ileum.
7. The lumen of the appendix.
8. Diverticulum of the esophagus and jejunum, sacculations of the large bowel, annular carcinoma, tuberculosis or any other factor causing a chronic obstruction.
9. Flexures and haustra of large intestine and rectum.

Being aware of these locations, what then is the procedure to follow in cases of foreign bodies? The patient should be advised to eat regularly and include in his diet food which leaves a residue, such as cereals, bread, mashed potatoes and bananas, to surround the foreign body with a protective coating and allow for more residue in the stool. Cathartics should never be administered because the powerful intestinal contractions may drive the foreign body into or through the intestinal wall. There should be repeated x-ray examination to determine the progress if the foreign body is one in which one might expect lodgment. When after repeated x-ray examinations the foreign body remains in the same position, surgical intervention should be considered. Other indications for surgical intervention are abdominal pain, tenderness, rigidity, disten-

tion with signs of obstruction, or the passage of mucus and blood.

Foreign Bodies in the Esophagus.—The narrowed pharyngeal and cardiac areas of the esophagus predispose to lodgment. Large coins, needles, bones, and partial dental plates are the most frequent foreign bodies which become lodged in this area. Treatment, whether or not it is surgical, is always directed toward the relief of obstruction. With regard to impacted foreign bodies it is noticed that their removal has passed largely from the domain of operative surgery since the advent of the esophagoscope. However, in the days before the x-ray and esophagoscopy the literature contains numerous accounts of cervical esophagotomy for the removal of impacted foreign bodies. Goursauld in 1738 appears to have been the first surgeon to perform this operation. In 1868 Cheever reported two successful cases and reviewed twenty-three cases of esophagotomy up to that time.

The following is the report of a case of a woman, aged twenty-seven, who consulted Dr. George G. Eitel, in 1892. Her history was that six years and four months previously she had swallowed a large part of her upper denture which she had broken the day before. At the time it gave her no discomfort so she paid little attention to it and did not mention the circumstances to anyone. One year later when eating hurriedly and swallowing a piece of beef that had not been properly masticated, she discovered that it would not pass on into the stomach and was regurgitated. From this time on she noticed obstruction. She consulted a physician, who advised it be left alone. Subsequently the obstruction progressed so that only liquids would pass and these finally would require many hours to pass through from the reservoir which was formed above.

Examination revealed an extremely emaciated patient with dyspnea and cyanosis. An esophageal sound revealed the obstruction two inches below the upper border of the sternum. The obstruction being located, an external esophagotomy was advised and performed the following day at Northwestern Hospital. (Dr. Eitel often told me about this case and said it was the first operation that he performed after locating in Minneapolis, which was in July 1892.) The plate was removed with difficulty and the stricture dilated with a small uterine sound until it was of sufficient size to permit passage of a stomach tube. The wound was left open to heal by granulation. The esophagus was dilated once a week for two months, during which time the patient was able to eat and regain her strength.

At the present time cervical esophagotomy may still be indicated in foreign bodies which have perforated the esophagus causing a peri-esophageal abscess.

Foreign Bodies in the Stomach.—Most foreign bodies which reach the stomach pass through the pylorus spontaneously. Those requiring operation are usually classed as bezoars and long objects which we know will not be able to pass the fixed turns. Some of these objects may be removed by means of gastroscopy. In 1502 Florian Mathias of Brandenburg performed the first successful gastrotomy for the removal of a knife nine inches long which had lodged in the stomach seven weeks. The patient recovered. The second recorded case was by Schwaben of Koenigsberg, who in 1635 extracted a knife ten inches long by gastrotomy. The first case of bezoar was reported by Baudamant of

Paris in 1779 and the first successful gastrotomy for the removal of a hair ball was performed in 1883 by Schoenboin of Koenigsberg.

There are three types of bezoars. The trichobezoar is the most common and is made up of hair. These vary greatly in size. Bennett, of Peter Bent Brigham Hospital, in February 1934, reported the removal of one weighing almost four pounds. The second group, or phytobezoars, are composed of vegetable matter such as skins, seeds, and the fibers of fruits and vegetables. The persimmon bezoars found in people in the southern part of the United States are the most common. To date there are only eighteen cases reported in the literature, the first of which was reported in 1894 by Outten of St. Louis. These bezoars are irregularly spherical in shape and of dark brown or black color and average five by six centimeters in size. Concretions form the third group of bezoars and are usually composed of shellac and occur in painters and employees of furniture factories who drink furniture polish.

Dr. Lipschultz, roentgenologist at the Minneapolis General Hospital, recently reported a case of a trichobezoar in a girl, aged sixteen, who was admitted to the hospital for the diagnosis and treatment of a large palpable tumor occupying the upper abdomen which she had noticed only one week previous to admission. She also had a history of crampy pains and vomiting. Fluoroscopic barium x-ray examination of the stomach was done and revealed the tumor mass and a normal stomach mucosa. An x-ray diagnosis of the trichobezoar was made, after which time the girl admitted pulling out her hair and swallowing it. Dr. Moren operated upon this patient and removed a ball of hair, weighing 480 grams.

This case was the only one in a ten year period at the Minneapolis General Hospital necessitating operative intervention for the removal of a foreign body in the gastro-intestinal tract. During this period there were twenty cases where the objects passed through without surgical intervention.

Foreign Bodies in the Duodenum.—The duodenum is the most fixed portion of the gastro-intestinal tract and in all is about ten inches in length. It is divided into four parts, of which the first is about two inches long, runs back, up, and to the right, under the quadrate lobe of the liver; the second descends for about three inches along the right edge of the head of the pancreas to the level of the lower border of the third lumbar vertebra; the third passes to the left horizontally 2.5 inches, which brings it to the middle of the vertebral column, where it is crossed by the superior mesenteric vessels; and the fourth ascends on the left of the column and ends in the jejunum. The second, third, and fourth parts are retroperitoneal and have very little mobility. The junction of the second and third portions is a fixed turn at almost right angles and it is at this point that long or pointed objects have difficulty in passing.

The following is a case of a foreign body in the form of a four inch medicine dropper which after remaining in the stomach for about five weeks began its way

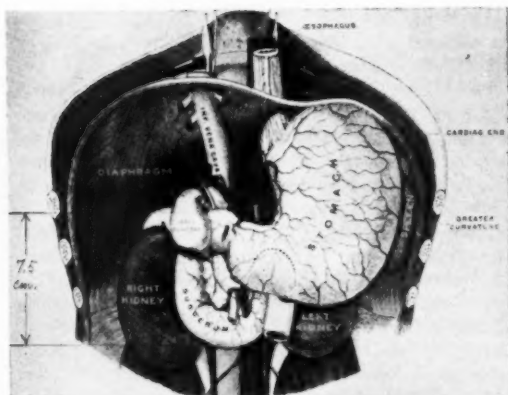


Fig. 1. Anatomical relations of duodenum showing length of second portion and showing junction of second and third portions.

through the duodenum, became lodged, and caused a perforation which required surgical removal and closure. Dr. Wilcox and I first saw the patient at our office on June 7, 1934.

The patient was a young lady, aged sixteen, with a history of having accidentally swallowed a medicine dropper about five weeks previously. She had used the rubber end of the dropper to irritate her palate in order to induce vomiting and in doing so suddenly gasped or gagged and swallowed it. The medicine dropper had been observed repeatedly by x-ray up to June 1, and was always in various positions in the stomach. The patient had no symptoms and was unaware of its presence.

X-rays taken June 7, at our office, showed the medicine dropper present in the second portion of the duodenum with the rubber bulb pointing upward and slightly medially and with the glass nozzle pointing downwardly.

With these findings we felt it was beginning to pass through and advised that she eat a meal of bananas in the evening to give the dropper enough bulk to carry it along. On June 8, she came in saying she did not feel so well and that she had vomited the bananas the evening before. She complained of slight pain in the right upper quadrant and said she was nauseated.

Fluoroscopic x-ray examination showed the dropper in the second portion of the duodenum with the appearance of a perforation of the duodenum at the juncture of the second and third portions with the glass end extending outside the lumen about one and one-half inches. Barium was given by mouth and showed the contour of the duodenum and dropper with a moderate dilatation of the duodenal loop indicating temporary stasis and tendency towards slight obstruction. The patient's temperature was 99 degrees and her leukocyte count 16,700. Immediate operation was advised and the patient was transferred to St. Barnabas Hospital by ambulance and operated upon.

Under ether anesthesia a right rectus incision was made. There was no free fluid on opening the peritoneal cavity. Palpation of the duodenal area soon located the point or free end of the dropper pointing downward to the right of and parallel to the spine and pushing before it the transverse mesocolon. The transverse mesocolon was then opened and the lesser peritoneal cavity observed, which contained no free fluid or exudate. The end of the dropper was in the retroperitoneal space so an incision was made over the posterior peritoneum. The glass end presented itself and slight traction was applied. Because of its conical shape

the opening in the duodenum was progressively plugged so that no duodenal contents escaped. Steady traction was applied until the hub and rubber bulb were flush with the duodenal mucosa. It then became apparent that pulling more on the medicine dropper might dislodge the rubber bulb, causing the duodenum to retract into an inaccessible position. Therefore, with moderate tension traction on the dropper, using it as a retractor, a purse string dulox suture was inserted. This enabled firm fixation of the duodenum. Then a slight nick in the duodenum was made beside the glass barrel and the entire medicine dropper with the rubber bulb was removed. Adequate control of the duodenum was continued by tension on the purse string suture. About three or four cubic centimeters of bile escaped when the bulb was removed. The purse string was tied and a few Lambert sutures closed the duodenal defect effectively. A small Penrose tube was placed adjacent to this area and the posterior peritoneum was closed. The abdomen was then closed.

The postoperative treatment consisted of hypodermoclysis of normal saline and proctoclysis in addition to nasal suction. After the first day, the nasal tube was clamped off every two hours, enabling patient to retain fluids by mouth. Patient retained fluids well with no nausea or vomiting so the tube was removed on the night of the fourth day. The Penrose tube was removed the seventh day and the patient left the hospital the twelfth day after having a very normal convalescence.

The point where the medicine dropper lodged and caused a perforation is the most usual point of obstruction for a foreign body of four inches in length. If it had progressed with the rubber part of the medicine dropper first it no doubt would have negotiated the fixed curve.

Fisher, in 1919, reported three cases of foreign bodies lodged in the second portion of the duodenum which required removal. Duodenotomy was performed for the removal of a hair pin, small screw driver, and a bar pin. They were in children aged three years, fifteen and one-half months, and thirteen months respectively, and all made uneventful recoveries.

In February 1934, Shallow reported the case of a nine months old child, in which the point of an open safety pin caught in the wall of the duodenum at the juncture of the second and third portions. With manipulation he pushed it into the second portion of the duodenum and performed duodenotomy.

He also reports the removal of a nail from the duodenum in a child of three years of age which had been present three and one-half months. At operation it was manipulated to the second portion of the duodenum and removed.

He reports a third case of a bobette pin which was lodged in the second portion of the duodenum in a child of two and a half. At operation the pin was palpated through the wall of the duodenum, but on examination a fistulous tract was found between the duodenum and the transverse colon from which it was removed and the fistulous tract closed.

Another case is that of a child, thirteen months, with an open safety pin lodged in the duodenum.

These cases of Dr. Shallow's came under his observation during a ten year period ending January 1933, in conjunction with Dr. Chevalier Jackson's bronchoscopic clinic at the Jefferson Hospital in Philadelphia. During this period, 834 cases of foreign bodies in the in-

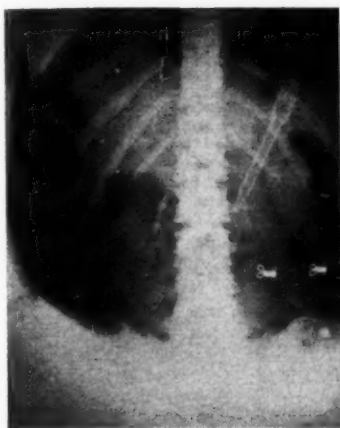


Fig. 2. Medicine dropper in stomach.

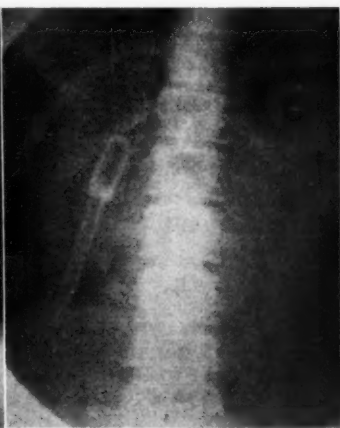


Fig. 3. Medicine dropper entering duodenum on June 7.



Fig. 4. Barium in stomach and duodenum with perforation of duodenum at juncture of second and third portions. The glass barrel can be seen outside the duodenum. Taken June 8.

testinal tract were admitted to the Clinic; 821 passed spontaneously; of the remaining thirteen, twelve were removed by laparotomy and one from the sigmoid by means of endoscopy.

In 1928, Dr. Habbe reported a case of a two inch nail in a five year old child. It became impacted in the duodeno-jejunal angle, where it remained for three weeks. There were no symptoms, but because no progress was made and because the point of the nail was down, a laparotomy was performed. The nail was palpated and milked around the duodeno-jejunal flexure into the upper jejunum, where a small opening was made and the nail removed.

None of the above cases were complicated with perforation of the duodenum.

Foreign Bodies in the Jejunum and Ileum.—Objects that pass the duodeno-jejunal flexure are apt to cause symptoms as they reach the terminal ileum. This can easily be explained because the normal physiological lumen of the beginning of the small intestine may be as much as two inches in width. It gradually narrows down and may be only one inch at its lower end.

The most common foreign bodies causing obstruction here are due to enteroliths, of which there are at least five varieties:

1. Those with gallstones as nuclei.
2. Those composed of fecal material.
3. Those composed of vegetable substances or hair.
4. Those composed largely of swallowed medicinal agents or food.
5. Those with foreign bodies as nuclei.

These may all start their journey as small objects but, as they slowly proceed, increase in size and become lodged in the narrowed portion of the intestine, causing either a partial or a complete obstruction.

Gallstones which have gained entrance to the small intestine by either a cysto-duodenal fistula or by way of a dilated common duct, may require operation. The stone may obstruct the duodenum, the jejunum, the

ileum or the sigmoid flexure of the colon. The high obstruction is usually caused by the larger stones.

Courvoisier, in 1890, collected 131 cases of obstruction due to gallstones. In a study of 3,064 cases of intestinal obstruction in 1925, only twenty-eight were due to gallstones, or .9 per cent (Coldren). The cases reported usually occurred between the ages of 50 and 70 years and was more common in women.



Fig. 5. Medicine dropper removed.

The symptoms are varied, depending on where the stone becomes impacted. A history of previous attacks of gallstone colic may be obtained. The stone generally makes its way through the wall of the gallbladder directly into the duodenum; hence there is no interference with the passage of bile and as a rule no cholangitis is present. The onset is usually sudden with vomiting, the severity of which depends on how high the obstruction is. If the obstruction is only partial the symptoms are less severe and distention is absent. At times, in flaccid abdomens a small tumor mass is palpable and is found to be in various positions due to the mobility of the small intestine. Many stones are able to pass through and after several attacks of partial obstruction are found in the stool. Unusually large gallstones have reached the terminal ileum before incarceration. Rankin reported one measuring 6.9 by 8.5 cm. Bennett removed one at operation with the greatest circumference of 5.5 inches and weighing 41.3 grams. Coldren reported one 1 by 2 inches in diameter, which passed after severe obstructive symptoms for one week with recovery.

X-ray of the abdomen may show the stone and if obstruction is present would show the dilated loops of small intestine above.

The treatment must always be surgical and must be done for the relief of obstruction. Early operation should be done. It is advisable to push the impacted stone proximally if possible, and perform an enterotomy and an enterostomy. If the stone be firmly impacted it is best to exteriorize the loop of intestine by the Mikulicz method and later on reestablish continuity of the bowel. Even under the best conditions the mortality is high.

Swallowed hair has one of three courses to follow. First, it may pass through the gastro-intestinal tract, causing no symptoms; secondly, it may collect in the stomach forming a trichobezoar which must be ultimately removed; or thirdly, it may pass through the pylorus to become lodged in the small intestine.

The following is a report of a case of a girl, aged seven, whom I first saw on September 18, 1931. Her illness began September 17, with pain over the entire abdomen. Vomiting started during the night. Her temperature was 101 degrees at the onset. Her bowels were normal. On September 18, the pain was localized at the umbilicus and seemed to come every hour. There was no muscle spasm or distension. On entering the hospital two days after onset of symptoms her temperature was normal, pulse 100, and leukocyte count 7,000. An enema was given with fair results. The vomiting seemed to subside and the child rested fairly comfortably. The following morning the abdomen was soft but slight peritoneal irritation was present and in the afternoon the vomiting and pain recurred. At this time a hard mass was felt in the right lower quadrant about three inches in length and an inch in diameter. It was not especially tender, was symmetrical and disappeared while palpating it. A diagnosis of an acute abdomen was made and the child operated upon.

The past history of the child is unimportant except that during the past year her appetite had been very poor and she frequently complained of stomach pain and nausea. Ten days before admission she had a severe diarrhea with offensive stools accompanied by vomiting. She would frequently awake at night and

vomit food and frothy material and then go back to sleep.

At operation we found a high obstruction in the jejunum with a greatly dilated bowel. An advanced peritonitis was present. The hair ball was removed by a longitudinal incision, thus relieving the obstruction and enterostomy done above. Following the operation her condition was poor and she died on the second post-operative day.



Fig. 6. Hairball removed from jejunum.

Following the operation the parents stated that the child had the habit of chewing and swallowing her hair. This began at the age of five when she started kindergarten and again at the age of six when she started school. At that time she had a bald spot on the right side of her head as a result. Her hair then was cut short and her parents thought she was cured. At the onset of school, just two weeks prior to her entrance to the hospital, she was very nervous and started the habit again. Her appetite had always been poor and she complained often of an upset stomach.

Mr. Charles Noon, in the *British Medical Journal*, March 1928, reports a similar case of intestinal obstruction caused by impacted hair balls in the terminal ileum.

Sherlitz of Berlin in 1930 reported a case of intestinal obstruction in a child of two years of age caused by an impacted ball of thread in the jejunum.

Intestinal obstruction caused by food lodged in the terminal ileum must also be considered. Dr. James Johnson, of this Society, operated upon a woman, aged 54, at the Abbott Hospital in 1928, for intestinal obstruction. The obstruction was found in the terminal ileum caused by a half dried peach which had swollen and became lodged. It was removed, an enterostomy done and the patient made a nice recovery.

Dr. Davis of Nashville, Tennessee, reported a case in 1931, of a physician's wife, aged fifty, whom he operated upon for intestinal obstruction caused by a solid mass of bran about the size of a hen's egg impacted in the terminal ileum.

Alvarez reported a similar case and warns against its use in the treatment of constipation as a means of adding roughage to the diet.

Obstruction of the lower ileum may also be caused by a mass of ascaroid worms impacted in this area. They should be removed by enterotomy. An enterostomy must also be performed through which any remaining worms may migrate. If this is not present they may go through the line of sutures causing a peritonitis.

Foreign Bodies in Meckel's Diverticulum.—Meckel's diverticulum, as a point of lodgment of foreign bodies, should always be remembered in every laparotomy per-

formed for an acute abdomen. Perforation of a Meckel's diverticulum by a fish bone was reported by Dr. Roscoe Webb in the *Annals of Surgery*, July 1933. He was able to collect only six cases in the literature, one of which was our case which I would like to present in greater detail.

The patient was a man, aged seventy-one, who had just returned from a trip on southern seas. On April 8, 1932, he developed pain in the lower abdomen which was not sharply localized, some nausea, but no vomiting. The following morning his pain was more severe, was intermittent, and seemed to increase in frequency and was accompanied by rather severe diarrhea. When first seen his temperature was 98.4 degrees, pulse 78, and a leukocyte count of 13,600. This was forty-eight hours after the onset of symptoms. He entered the hospital with a diagnosis of probable acute appendicitis. The physical findings of rigidity and muscle spasm were absent. Rectal examination was also negative. Because of the continued pain an exploration was advised, but the patient requested further consultation. During the next three hours the pain seemed to shift rather quickly to different parts of the abdomen. At 9:00 p. m. on April 10, the pain became more severe and most marked in the right lower quadrant with definite increased muscular rigidity. A diagnosis of appendicitis was made.

The past history is essentially negative except for an ulcer history with a gastro-enterostomy done for the relief of duodenal ulcer in 1909 and an excision of the pyloric end of the stomach in 1925 for gastric ulcers.

We operated upon the patient at 11:00 p. m., under spinal anesthesia. A right rectus incision was made. No free fluid was noted upon opening the peritoneum. The appendix was easily exposed and appeared normal. It was, however, removed. The colon was then investigated and found negative with the exception of extensive adhesions resulting from previous operations. The ileum was about to be examined when the patient strained and a loop of ileum presented itself in the operative field, exhibiting a small broad based Meckel's diverticulum, the apex of which was whitened and through this area a fishbone protruded into the free peritoneal cavity, to the extent of a quarter of an inch. The pathological problem having been solved the fish bone was removed, and the perforation with surrounding necrotic area invaginated with a purse string suture and reinforced with several Lembert sutures. The abdomen was then closed without drainage. Convalescence was uneventful.

Dr. Webb's patient was a girl, fifteen years of age. In his case the diverticulum was about the size of the thumb of a rubber glove, so was removed entirely and the stump invaginated.

Faber, of Berlin, in 1898, did some interesting experimental work with fishbones and gave food with fish bones to adults, some of whom had a normal gastric acidity or hyperacidity and some of whom had a sub-normal acid gastric content. In the former group the feces showed no fishbones, while they were present in the latter. He infers that in the first instance normal decalcification could take place. I do not know whether that factor played a part in these cases.

Fontaine and Bauer reported a case of a pin lodged in Meckel's diverticulum which was removed before it had perforated. Hauke recorded a case of the small biliary calculi in a Meckel's diverticulum causing suppurative and Davis reported a case which he operated upon with a diagnosis of acute appendicitis which

proved to be an acutely inflamed diverticulum containing a toothpick.

With these cases in mind a surgeon should always carefully explore the terminal ileum for the possibility of a Meckel's diverticulum, which is present in about 2 per cent of people and if found should be resected.

Foreign Bodies in the Appendix.—Foreign bodies in the appendix have always been regarded as one of the causes of acute appendicitis. This was due to the various forms that fecal matter would assume when lodged in the appendix. These bodies are most often called cherry stones, grape seeds, date stones, lemon and orange pits, and children of today are still being warned not to swallow any of the above because of the danger of appendicitis.

It is true, however, that actual ingested foreign bodies may find their way into the appendix and cause inflammatory changes. Mestivier in 1759 recorded the earliest authentic record of an appendicular lesion produced by a pin which perforated the tip of the appendix causing an abscess. The patient died and at autopsy the pin was found. Cases are recorded of a bone, a tooth-brush bristle, a wisp of broom, a piece of corn-husk, and a fishbone being found in acutely inflamed appendices. During the pheasant and duck season, shot, undoubtedly, are ingested with the meat and find their way to the lumen of the appendix. They may never cause trouble, but are found either in a routine fluoroscopy or in the appendix at operation.

Nutting of Washington, D. C., reported a case in 1932 in which he utilized the appendix in facilitating the removal of a clinical thermometer which had been swallowed and apparently lodged in the cecum. At operation the thermometer was milked into the appendix after the meso-appendix had been cut, and appendectomy performed. Stangl reports a similar case where a nail was removed in the same manner. Both these objects usually do not require surgical removal if given time to pass through.

Foreign Bodies of the Large Intestine.—One might think that if a foreign body reaches the cecum it would certainly be able to pass through the colon and rectum without further trouble. This is not the case for there is actually more danger of a perforation by a sharp object here than in the small intestine because the wider caliber of the bowel allows the object to turn on itself and in doing so might become impacted in the transverse diameter. In this fixed position the peristaltic action would be increased, and a pressure necrosis might be produced in addition to a local inflammatory process. In the small intestine the narrower lumen makes it difficult for a foreign body to turn around and its slow vermicular action makes lodgment or perforation unlikely.

As a result of a perforation we may find a peritonitis, peritoneal abscess, or fistulous communication between intestine and intestine, or between intestine and some other organ, such as the bladder. Anatomical or pathological conditions such as sacculations of the large bowel, annular carcinoma, or tuberculosis would predispose to an obstruction caused by a foreign body.

We recently operated upon a man, aged seventy-four, who came in with a bowel obstruction which had come on suddenly. Colon x-ray revealed an obstruction in the splenic flexure due to carcinoma. This was confirmed at operation and showed the narrowed lumen obstructed by an impacted watermelon seed.

Many other objects after traversing the gastro-intestinal tract become lodged in the rectum and must be removed manually or by means of a proctoscope.

Genglaire reported a case in which the patient swallowed thirty frogs and had no symptoms until they reached the rectum. A large mass of tangled frog bones was extricated manually.

Foreign bodies are also inserted into the lower reaches of the intestinal canal through the anus, but such cases are beyond the province of this paper.

Conclusions

1. Most foreign bodies of the intestine are ingested accidentally and in the majority of cases are evacuated spontaneously.

2. Certain foreign bodies have a predilection for lodging in either the junction of the second and third portions of the duodenum or in the terminal ileum.

3. The objects which are of such a nature that might become lodged should be carefully studied clinically and by the x-ray.

4. All obscure acute abdomens should be x-rayed with the possibility in mind that a foreign body might have been ingested and lodged.

5. If there are signs of lodgment with clinical and x-ray findings immediate operation should be instituted.

Discussion

DR. KENNETH PHELPS: After hearing part of this paper I am sure there is very little to say from the point of view of the surgeon. However, there is another point of view which I could perhaps bring out and that is the point of view of the man who wields the esophagoscope. I brought down a few slides which will bring out the points I wish to make better than any other way. I will not take very much time as the subject has already been so thoroughly discussed.

The first place in the gastro-intestinal tract we find foreign bodies lodged is, as Dr. Eitel has mentioned, in the esophagus. I went over my cases this afternoon from a standpoint of frequency of lodgment in the esophagus or in the air passages, and I find that in my group of adult cases, 115 were lodged in the esophagus and fifteen only in the air passages. That means that in adults approximately 10 per cent of foreign bodies were in the air passages, the other 90 per cent in the food passages.

The types of foreign bodies are related to food or eating. Usually the adult foreign body patient has false teeth or very poor teeth. They are eating, do not masticate properly, or due to dental plates do not feel the foreign body in their mouth. In children, as a rule, the case is just the opposite. Children comparatively rarely get foreign objects in their throats while eating.

Children's food is watched, carefully prepared and they are fed usually by a nurse or the mother, so they do not have this accident happen as a result of eating. With a child, most foreign bodies lodged in the esophagus or windpipe are the result of accident, something picked up off the floor or eaten between meals. In children the most common site of a foreign body is in the air passage, shown in my group of cases by 140 in the air passages to 100 in the esophagus.

Very rarely is it necessary to open the esophagus in order to get a foreign body out. Usually an external operation is done when the foreign body has already perforated, a bone or pin which has gone through the esophagus, and caused an infection in the peri-esophageal tissue in the neck or mediastinum.

Foreign bodies in the stomach cause symptoms only when they obstruct the pylorus or prop it open (as a safety pin might). Needles are more liable to perforate than common pins. When there is a foreign body in the stomach we want to know: (1) can it get through the pylorus? (2) If so, is it liable to cause trouble in the intestines? As a rule, any object which will go through the cardia will pass through the pylorus, but something pushed through the cardia may not go through the pylorus. A long object may not be able to make the turns of the duodenum. An object 5 cm. long is the largest a child of two years can pass. A full length pencil has been known to pass, but it should not be allowed to do so. Removal by use of the gastroscope is safe and should be advised for all safety pins and other objects which might perforate.

Foreign bodies in the intestines seen to remain lodged in one spot for four days should be removed. Perforation occurs more frequently from ulceration than from direct puncture. No cathartics, other medications, nor changes in diet should be prescribed for fear of setting up increased peristalsis. Objects like safety-pins go through with the safe end first and the point trailing. As a rule small safety pins and fairly large safety pins will go through. The medium sized safety pins are the ones most likely to cause perforation.

By means of a gastroscope we can see probably two-thirds to three-fourths of the stomach (of course we have to use the open one) and by external manipulation, under fluoroscopic control, ordinarily we can get any object, even one that is in the pylorus, into line with our tube and remove it. For purposes of examination with the closed tube with a lens system we can see the entire stomach, but of course, we cannot operate through this instrument. (Slides shown.)

DR. A. E. WILCOX: First I want to congratulate Dr. Eitel on his excellent presentation of this subject. He has some very pretty cases and presented them in a delightful and instructive manner. His paper will become a permanent part of the literature and serve as a splendid reference. All the cases that we had, as you may well know, are very interesting to us. I wish at this time also to thank Dr. Phelps for his interesting discussion and presentation of cases.

Of these cases that Dr. Eitel presented, I think the one where the patient swallowed the medicine dropper was the most interesting and proved to be rather

dramatic. The purse string suture placed in the duodenum and which held the rubber bulb attached to the glass portion of the dropper was of inestimable value and proved to act as a good retractor in holding the duodenum from slipping into an inaccessible position during the removal of the foreign body.

I congratulate the Society in having this paper presented before this session.

DR. S. R. MAXEINER: I would like to indorse what Dr. Wilcox has just said regarding the excellence of Dr. Eitel's paper. Dr. Eitel has presented his subject in a very learned and entertaining manner. I can personally recall seven cases which we have had.

Case 1.—This case was a patient in the practice of Dr. Farr. A man had an old-fashioned silver dollar in his hand and when his wife attempted to take it away from him he slipped it into his mouth. Knowing that he was ticklish, she gave him a nudge in the ribs and the patient swallowed the dollar. The dollar was removed by abdominal section. This case gave rise to many humorous remarks as to whether the patient was a dollar in or a dollar out. The dollar removed from the stomach constituted the sole fee collected by Dr. Farr.

Case 2.—The next case is one that ended in a malpractice suit against Dr. Farr. The man was eating some food which the wife had carefully prepared with an egg-beater and one of the wires which became detached from the egg-beater lodged in the patient's throat. The wire penetrated the cervical esophagus and when he came to Dr. Farr, the wire was penetrating deeply into the neck and was accompanied by a severe infection. The wire was removed through an external incision over the neck, and the deep tissues were drained. The patient subsequently developed a mediastinal abscess and was seen in consultation by Dr. Arnold Schwyzer. At the suggestion of Dr. Schwyzer, the incision was reopened and the superior mediastinum was drained. The patient made an uneventful recovery but had a paralysis of his recurrent laryngeal nerve which was the basis of the malpractice suit.

Case 3.—In another instance, a case of Dr. Farr's, a patient had an obstruction of the bowel due to a Murphy button. A segment of bowel containing the Murphy button had to be resected. This patient also made a normal recovery.

Case 4.—Two years ago we operated upon a patient with acute appendicitis, and when the appendix was opened it was found to contain bird shot. This is not an uncommon finding, and x-ray studies reveal bird shot in the appendix occasionally during the hunting season.

Case 5.—This man was referred to me with a pelvic abscess, the man having had a very acute attack of abdominal pain which in every way resembled appendicitis. A tentative diagnosis of pelvic abscess due to a ruptured appendix was made. However, upon opening the abdomen the appendix was found to be normal and when the abscess was opened a toothpick was found to be penetrating a diverticulum of the sigmoid. The patient made an uneventful recovery.

Case 6.—In this patient an exploratory operation revealed a perforating malignancy of the sigmoid, undoubtedly developing upon a diverticulum. The bowel had perforated and was walled off in the pelvis and contained a campaign button with a celluloid top. The

spring pin which accompanies these buttons was not present but the celluloid, in a much degenerated condition, still encased the button. The foreign body was removed, the pelvis drained and the patient made an uneventful recovery, to be operated upon subsequently for a malignancy.

Case 7.—This patient had an intestinal obstruction as the result of a very large gallstone which evidently penetrated through a spontaneous anastomosis between the gallbladder and the intestine. This patient did not survive her operation.

Again I wish to congratulate Dr. Eitel on his very excellent presentation.

DR. IVER SIVERTSEN: I would like to add one case which is interesting along the lines of intestinal obstruction, or foreign bodies in the intestine.

The case is that of a man who worked in a hardware store and sold window screens. It appears that frequently he placed a piece of the cut-off screen in his mouth and chewed it. During this process, he no doubt swallowed some of the small wires from the screen.

The patient was seen because of an intestinal obstruction and when he was operated upon we found that he had two areas of necrosis of the bowel, forty inches apart, the wire from the screen having penetrated the blood vessels in these areas and causing a thrombosis with a resultant necrosis. Therefore, there were two obstructed places. Because of these two different areas, it was deemed advisable to resect the bowel and forty inches of the bowel were removed.

The patient made an uneventful recovery even though the sterile nurse answered the telephone, handled the receiver, rinsed her hands in bichloride and came back into the field of operation.

DR. JAMES A. JOHNSON: I also want to congratulate Dr. Eitel on his very excellent presentation on this subject. It is one of the best papers I have heard read before this Society for some time. Foreign bodies in the gastro-intestinal tract have always excited a good deal of interest. I can recall in the early years from 1915 on, when I first came to the University, we had a great many cases of foreign bodies in the gastro-intestinal tract, particularly in children. We had two cases in which small children swallowed open safety pins and both of them passed without any difficulty. One child swallowed over a dozen small pins, all of which passed without any symptoms. I have had two children in private practice swallow open safety pins, both of which became impacted in the esophagus and had to be removed by Dr. Phelps through the scope. During the last fifteen years I have not seen so many cases. It is quite probable that there are not so many objects on the floor since the vacuum cleaner has become almost universal equipment in the home.

I have had several cases of gallstones which have obstructed the lower ileum. Fishbones often perforate the intestinal wall. I have seen three cases, one perforating the esophagus and two perforating the intestine. One had formed an abscess in the abdominal wall and a fishbone was removed from the abscess.

CASE REPORT: CONGENITAL OBSTRUCTION OF THE THIRD PORTION OF THE DUODENUM IN A TWO YEAR OLD BOY. OPERATION WITH RECOVERY.

E. A. Regnier, M.D.

I believe that the title of this report is probably incorrect but the case does not fit any diagnostic category. I thought that the case was of unusual interest. In going over the literature on the subject of duodenal obstructions I found nothing in the literature just like

tate food ingested twenty-four hours previously. When put on a strictly liquid diet vomiting would be very infrequent. There was some constipation.

Physical findings were that of a child about two years of age with marked malnutrition. The only abnormal findings were the rather distended upper abdomen, tenderness in the right upper quadrant, and the possibility of a mass being felt in the right upper quadrant. The picture was obviously one of partial obstruction of the gastro-intestinal tract. A series of gastro-intestinal x-rays were taken and these showed a marked degree of obstruction which appeared to be at the duodeno-jejunal juncture. This was manifested by the tremendously



Fig. 1.



Fig. 2.

this case. There were innumerable articles, particularly in foreign literature, on obstruction of the duodenum due to congenital bands, aplasias, atresias and so-called traction of the mesenteric vessels over the third portion of the duodenum.

This is a case of a male child, two years old, whom I saw in consultation in March, 1934.

The history is that of a male child, normal at birth and during the first year of life. When about one year of age or coincident with the change of diet from semi-solids to solids and about the time the child began to walk, he developed projectile vomiting, distention of the upper abdomen and failure to gain in weight. There was no actual weight loss but a relative loss because during the period of his illness the child underwent physiological growth in stature. The child weighed twenty-one pounds at one year of age and at two years of age still weighed only twenty-one pounds. There was no complaint of pain or any apparent physical suffering. Vomiting would occur sometimes daily, sometimes every other day. The child would often regurgi-

dilated duodenum in the first, second and third portion. You will notice that the duodenum is equal in diameter to the greatest diameter of the stomach. After six hours there is about 60 per cent retention of barium in the stomach and duodenum. Dr. Ude read the films and diagnosed obstruction about at the ligament of Trietz.

At operation many mechanical difficulties were encountered because the stomach and duodenum filled two-thirds of the abdominal cavity. The third portion of the duodenum was at the level of the fifth lumbar vertebra. The dilated duodenum was traced to where it crossed the vertebral column. At this point it was directed posteriorly and seemed to entirely disappear. Upon tracing its path behind the mesentery of the bowel, the beginning of the jejunum was identified. The jejunum was about 2 cm. in diameter, the duodenum about 3 inches in diameter. There were no bands, no anomalous vessels, no anatomical structures to cause obstruction except for the narrow hiatus behind the mesentery. The only logical and mechanically possible procedure seemed to be a jejuno-duodenostomy. This was done anastomosing the jejunum to the third

portion of the duodenum through the transverse mesocolon.

During the first thirty-six hours postoperatively the child suffered some distention but this was controlled by continuous duodenal drainage. From that time on the child made an uneventful recovery. Subsequent x-ray films show normal emptying time of the stomach and the child gained in weight very rapidly and was completely relieved of the obstruction.

months the pains had been more severe and more frequent, and he had complained of weakness, tiredness, frequent urination and nocturia. There was no history of gastro-intestinal disturbance even on careful questioning. General physical examination disclosed nothing of importance; the patient being rather stout it is not surprising that no abdominal mass was felt. The urine showed albumin and a few leukocytes.

At cystoscopy the bladder appeared to be normal.



Fig. 1. X-ray showing catheters in ureters.



Fig. 2. Bilateral pyelograms.

The only logical deduction that I can make as to the etiology of this obstruction is that it was due to the pressure of the mesentery plus a narrowed opening at the site where the duodenum crossed behind the mesentery. The origin is probably congenital. The change of posture and the change of diet unquestionably brought about the tremendous dilatation of the duodenum secondary to the narrowing of the lumen at the duodeno-jejunal juncture.

A series of x-ray films was shown.

CASE REPORT: HORSESHOE KIDNEY WITH COMPLICATIONS

Theodore H. Sweetser, M.D.

This man, fifty years old, was referred to me for urologic examination July 2, 1934, by Dr. A. L. Hamel, because he had found albumin and erythrocytes in a routine urinalysis. According to his history there had been a serious injury in an automobile accident fifteen years ago, necessitating laparotomy for an intestinal injury. About one year later pyuria had been discovered and a left nephrectomy had been at first advised. However, the pyuria disappeared after removal of an infected tooth and the patient was advised simply to have an annual physical examination including urinalysis.

During the intervening years he had had pains intermittently in the abdomen, especially just to the left of the umbilicus. The pains had been accentuated by walking and by stretching the arms above the head, and had been relieved by sitting or lying down. They had never radiated to the back. During the last three

The ureteral catheters were passed easily to both renal pelves; a fairly large amount of fluid was aspirated from the left renal pelvis. Indigocarmine, injected intravenously, was recovered from the right catheter in five minutes, but from the left in only a trace after fifteen minutes. The plain roentgenogram with opaque catheters in place (Fig. 1) showed some enlargement of the left renal shadow with a suggestion that the lower pole might extend over the spine shadow; the left ureteral catheter was shown to extend in a large curve well beyond the renal shadow laterally, and then downward and medially, ending so low and so far medially as to show that the lower pole of the kidney must at least extend some distance toward the spine. The locations of the stone shadows are also worthy of notice. Close study of the bilateral pyelogram (Fig. 2) clinches the diagnosis: The lower calices of both kidneys extend much farther medially than any other parts, and close observation shows that one lower minor calyx on each side extends anterior to the spine itself; the main part of the left renal pelvis shadow is seen actually to extend farther laterally than the shadow of the renal cortex; the lower stone shadow, of dumb-bell shape, is just at the edge of the pyelogram, suggesting a partial perforation of the wall of the renal pelvis. The diagnosis then was: (1) horseshoe kidney with fusion of lower poles; (2) slight hydronephrosis of right side and severe hydronephrosis of the left side; (3) two calculi in the left renal pelvis (it should have been suspected that one of them perhaps partially perforated the wall of the pelvis). Left heminephrectomy (Figs. 3, 4, and 5) corroborated the above diagnosis. There were numerous fibrous bands in the perirenal fat, especially around the perforating stone. The renal pelvis contained fully 500 c.c. of slightly cloudy urine. The ureter passed anterior to the isthmus. The renal blood supply consisted of a number of entirely separate vessels to the upper and lower parts. The isthmus

at the groove between the two halves was about 2x1 cm. in cross section; the minor calices of the left and right sides came within about 1 cm. of each other. The blood vessels supplying the isthmus came from above, below, and behind, allowing very little mobilization until they had been divided.

After a rather stormy convalescence the patient made a good recovery, and reports he feels well and has been completely relieved of his abdominal pains and his old constant tiredness.

isthmus, sometimes even over the margin of the spine. Braasch described that in general terms and Gutierrez has used it as a means of record in describing his "horseshoe kidney pyelographic triangle."

Treatment may be conservative or may have to be radical. In our case, we believe that anything short of left nephrectomy would have unjustifiably increased the risk and decreased the chance of cure of the symp-



Fig. 3. Specimen viewed from front; pelvis filled with cotton.



Fig. 4. View of specimen from rear. (Shadow in lower left corner is cotton.)



Fig. 5. Side view of specimen.

Horseshoe and other types of fused kidney were known centuries ago as rarities and later simply as curious anomalies. More recently, with more accurate means of study, they have been accurately diagnosed and sometimes treated with complete relief of distress. Most patients presenting themselves with horseshoe kidney come for relief of symptoms that may be ascribed mainly to complications, such as hydronephrosis, infection, or calculus, which are results of faulty drainage caused by the anomaly. This was true in our case, though one might ascribe to the anomaly itself the fact that the abdominal pain was accentuated by raising the arms above the head (pressure of the isthmus across the great vessels and nerve plexuses). Such a significant symptom was emphasized by Rovsing.

As is true of other lesions not frequently met, many patients with horseshoe kidney are treated off and on for years for various troubles, sometimes medically and sometimes surgically, without lasting relief. Systematic study and attention to details will usually reward the searcher. Roentgenography and particularly pyelography are the most enlightening steps in the study of the condition. The lower poles of the kidneys are found to be inclined toward instead of away from the midline and the shadow of the isthmus itself is sometimes discernible. There is also a fault in the rotation of the long axis of each kidney so that the calices point posteriorly or posteromedially instead of laterally. Moreover, the lower calyx can be traced into the

toms. Any conservative treatment should (1) correct any disability of the affected side, and should also include (2) division of the isthmus to relieve the drag and pressure on vessels and nerve plexuses, and (3) placement and rotation of the kidneys into the normal lumbar positions in so far as is possible, with support there by nephropexy. This was advocated first, I think, by Edmund Papin of Paris, and recently also by Frederic E. B. Foley of St. Paul. However, in a series of twenty-five cases reported by Gutierrez, of which nineteen were diagnosed by urologic examination, the ones in which relief was obtained were those treated by heminephrectomy. Also, in a series of sixty-eight cases reported by Walters and Priestley of The Mayo Clinic, only one was an uncomplicated case treated by division of the isthmus, and in that case relief was only partial. In our case we expect to check the position and function of the remaining right kidney by intravenous pyelography after some months. If the right half of the isthmus receives blood vessels from all directions and in considerable number as did the left side, I doubt that the right kidney can be rotated and brought into the normal lumbar position; hence we will not advise any surgical interference unless some serious reason exists. It seems now that the simple division of the isthmus has sufficiently released the right kidney.

Dr. Martin Nordland reported a case of inoperable carcinoma of the right breast with presentation of the patient.

The case had been treated by three courses of deep x-ray therapy since July, 1934. Lantern slides were shown to demonstrate the progress of the treatment.

A report of the case with illustrations will be published at a later date.

Respectfully submitted,

F. A. OLSON, M.D., *Secretary-Treasurer.*

THE ADMINISTRATION OF THYROXINE

There can no longer be doubt that thyroxine represents the effective iodine-containing hormone of the thyroid gland. One of the puzzling features of thyroxine from almost the outset of its discovery and isolation has been the repeated observation of the inefficacy or greatly lowered effectiveness of thyroxine when it is administered by mouth rather than intravenously. At first thought one would expect the purified hormone to be quite as potent as an equivalent amount of desiccated thyroid gland. According to observations at Rush Medical College in Chicago by Harrington and Salter the physical properties of thyroxine are such as to make it highly probable that the absorption of this substance after oral administration would be inefficient and erratic; the digestion product, on the other hand, possessing as it does a much wider range of solubility, might well be absorbed almost quantitatively. The Chicago clinicians conclude that solubility of the thyroxine compound administered would therefore appear to be important and destruction by intestinal enzymes must be considered; but only future work will determine whether or not some other factor, as yet unknown, is also to be considered. (*Jour. A. M. A.*, December 2, 1933, p. 1805.)

ACCEPTANCE OF SUNLAMPS

During the past seven years the Council on Physical Therapy has devoted much time and effort to the question of ultraviolet radiation therapy, and in two preliminary statements gave its conclusions and its specifications for acceptance of "sunlamps." Sunlamps, so called, are not to be confused with therapeutic ultraviolet generators designed for service in hospitals, clinics and offices of physicians. Since sunlamps are for unsupervised home use, they are often of low intensity to avoid injury from overdosage. In accepting sunlamps, the Council on Physical Therapy calls the attention of the profession to the following: A. The Council on Physical Therapy definitely withholds acceptance of the postulatory principle of dual-purpose lighting, because it is highly theoretical and acceptable clinical evidence substantiating its therapeutic or prophylactic value has not been presented. B. The Council on Physical Therapy declines to accept sunlamps if the manufacturer fails to state in all advertising matter and descriptive literature the distance between the lamp and the recipient required to equal the intensity of midday, midsummer, midlatitude, sea level, natural sunlight. C. The manufacturers of acceptable sunlamps for home use have agreed to discontinue objectionable claims, such as that exposure to ultraviolet rays increases or improves the tone of the tissues or of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity, maintains health or tends to prevent colds, because these claims have not been conclusively substantiated by experimental evidence. D. Until further evidence is presented to prove otherwise, the Council declares that the erythema ble ultraviolet is emitted by the source. (*Jour. A. M. A.*, January 6, 1934, p. 42.)

January, 1935

MISCELLANEOUS

The War Against Tuberculosis*

The fight being carried on against tuberculosis is a genuine war of extermination and we can rightfully speak in military terms. There are no pacifists in this war although there may be a few slackers.

We are winning this war but this is no reason for stopping. To show some of the territory we have gained, I would like to point out that thirty-five years ago the death rate from tuberculosis, in the United States, was over 200 per 100,000 population. Today it is 60 and Minnesota is far below the average with a rate of approximately 38 deaths per 100,000. But even 60 makes an enormous figure. It means 75,000 deaths annually from this disease in our country. This is about 50 per cent more than the number of soldiers killed in action in the World War. Much has been said about war victims, but as a country we are quite apathetic over the death toll from tuberculosis. For every one wounded in the World War, we have at least two wounded by tuberculosis. In this situation it must be gratifying to you to know that no state in the country has a more forward-looking program of tuberculosis prevention than Minnesota.

At no time in this tuberculosis warfare have things been so favorable as now for eradication. The tuberculosis death rate used to be the important thing. Today we focus on the living cases and on the problem of potential cases. What we needed was some weapon to tell us where these cases were. If we left it to the tuberculosis patients to wait until symptoms appeared, we could not make progress. By the time the patient recognizes that there is something wrong, the disease is moderately or even far advanced. The time to start is before the patient is aware that he is sick. Tuberculin tests tell us how many in a group have been infected. When the tuberculin test is followed by x-ray examination of the positive reactors, that is, the ones who have been infected, all those diseased are easily found. In addition it enables us to find the source of infection. It is a benefit to the community because it shows who are the people that are sowing the infection.

The National Tuberculosis Association program is diversified. One phase is fundamental research on tuberculosis. It centers around the study of the actual nature of the germ causing the disease. This work must be done on a large scale. Probably 100 pounds of tubercle bacilli have been grown, an amount sufficient to infect five billion animals. It is like working with high explosives but these virulent germs are handled with greatest care in the laboratory. Through these methods it has been possible to develop the pure tuberculin in use today. While we obtained fine results with the old tuberculin, these results were not always uniform. By using this highly purified material, it is possible to compare results obtained in California with those in Maine, with confidence in the correctness of the figures.

*Abstract of talk given by Dr. Esmond R. Long, of Phipps Institute, at the annual dinner of the Minnesota Public Health Association, Friday, November 23, 1934, at Nicollet Hotel, Minneapolis.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Books Received for Review

BODY MECHANICS. Joel E. Goldthwait, M.D., LL.D., et al. 281 pages. Illus. Price, cloth, \$4.00. Philadelphia: J. B. Lippincott Company, 1934.

TREATMENT BY DIET. Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P. Department of Medicine, Northwestern University, Chicago. 615 pages. Price, cloth, \$5.00. Philadelphia: J. B. Lippincott Co., 1934.

THE 1934 YEAR BOOK OF GENERAL MEDICINE. George F. Dick, M.D., et al. 843 pages. Illus. Price, cloth, \$3.00. Chicago: Year Book Publishers, 1934.

PERIODIC FERTILITY AND STERILITY IN WOMAN. Professor Herman Knaus, Head of the Clinic for Gynecology and Obstetrics of the German University of Prague. Authorized English Translation by D. H. Kitchin, and Kathleen Kitchin, M.Sc., M.B., B.S., London. 192 pages. Illus. Price, cloth, \$6.00. Vienna: Wilhelm Maudrich, 1934.

SYSTEM OF DIET WRITING. William S. Collens, B.S., M.D., Chief of Diabetic Clinic, Israel Zion Hospital, etc. Price, \$5.00. New York: Form Publishing Company, 1934.

TEXTBOOK OF BACTERIOLOGY. Hans Zinsser, M.D., and Stanhope Bayne-Jones, M.D. Seventh Edition. 1226 pages. Illus. Price \$8.00. New York and London: D. Appleton-Century Company, Inc., 1934.

The latest edition of this text maintains its excellent quality by summarizing the present knowledge of bacteriology in a judicious way. This attitude lends authority for the student and casual medical reader and for the bacteriologist leaves open the questions to be attacked by further research.

For instance, in the discussion of viruses and the filtrable forms of bacteria, while admitting a possible relationship, the authors are not convinced by any of the evidence presented to support the conception of viruses as having a bacterial origin; in fact, they regard this as highly improbable.

Complete perusal of the text has not been done.

C. A. McKINLAY.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. Lawrason Brown, M.D. Sixth edition. 275 pages. Price, \$1.75. Philadelphia: Lea & Febiger, 1934.

Dr. Lawrason Brown, in his sixth edition of Rules for Recovery from Pulmonary Tuberculosis, has revised and enlarged his earlier publications. There is a wealth of detail valuable as a source of reference for the patient who is sincere in his desire for health. The entire book is written very simply and conveys the necessary information which might be too easily forgotten if the patient were to depend upon his memory.

Although he is specific in stating his rules and explaining the necessity of adhering to them, Dr. Brown realizes the danger of permitting a layman to depend solely on this source of information and recommends always that the patient be under the constant care of a physician.

It is to be noted that Dr. Brown advises the use of gauze to be held over the patient's mouth when he coughs. In this, many physicians will take issue with him, as it has been shown that paper napkins are much more sanitary.

Patients may be unnecessarily worried over their inability to meet the outdoor living requirements stated by Dr. Brown, but the patient's own physician will be able to give him the reassuring information needed to circumvent this.

On the whole, the book is very much worth while and contains a valuable bibliography for additional reading along the same line.

F. L. JENNINGS.

GYNECOLOGY. Brooke M. Anspach, M.D. Professor of Gynecology, Jefferson Medical College. 5th edition. 832 pages. Price \$9.00. Philadelphia: J. B. Lippincott Co., 1934.

This is a book that is decidedly worth careful study by all interested in gynecology. Though comprehensive in scope, it is concise in form and the manner of exposition is most interesting. One comes from a study of this book feeling that he has had the privilege of having the whole field of gynecology carefully considered and assayed by a great clinician whose experience has been very extensive. The general effect of this work is so exhilarating that it is difficult to speak of the book in moderate language.

The illustrations leave nothing to be desired. The bibliographies are excellent.

Of outstanding interest are the chapters on physiology, backache, constitutional types, and endocrine disorders. However, all parts of the book are so well balanced and of such equal strength that it is difficult to single out conspicuous examples of excellence.

R. T. LAVAKE.